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# Combinations of 148 Navigation Stars and the Star Tracker

(NASA-TM-82203) COMBINATIONS OF 148  
NAVIGATION STARS AND THE STAR TRACKER (NASA)  
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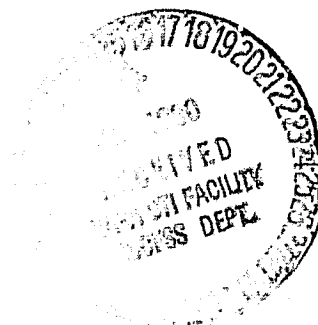
Mission Planning and Analysis Division

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National Aeronautics and  
Space Administration

Lyndon B. Johnson Space Center  
Houston, Texas



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SHUTTLE PROGRAM

COMBINATIONS OF 148 NAVIGATION STARS  
AND THE STAR TRACKER

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## ACRONYMS AND ABBREVIATIONS

STS	Space Transportation System
IMU	inertial measurement unit
nav	navigation

## 1.0 INTRODUCTION

This document presents a study of the angular separation of all star combinations for 148 navigation (nav) stars. The document also presents a study of the angular separation of each pair of nav stars that satisfies both star trackers' fields of view (fig. 1).

## 2.0 ANALYSIS

Currently, there are 148 nav stars in the onboard software for the Space Transportation System (STS)-3 and following missions listed in table I (ref. 1). The original number of nav stars has been reduced to 50 stars for STS-1 and STS-2. This analysis outlines the angular separation of all star combinations of the nav stars (table II). Figure 2 shows the distribution of the nav stars in the celestial sphere.

The second study presents the angular separation of each pair of nav stars that satisfies the viewing constraints of using both star trackers simultaneously. The star tracker's centerlines are  $87.65^\circ$  apart, and each has a square field of view of  $10^\circ$  by  $10^\circ$  (fig. 2). Therefore, the procedure is to have one star tracker centered on one star and the second star tracker within  $\pm 5^\circ$  from the second star. Any pair of stars within the star tracker filtered constraints ( $82.65^\circ \leq \theta_s \leq 92.65^\circ$ ) can be used for inertial measurement unit (IMU) alignments and can be identified in table II by the nomenclature "\*\*\*\*\*." Finally, table III summarizes all the star combinations of the star trackers with a  $\pm 5^\circ$  filter.

## 3.0 CONCLUDING REMARKS

It is interesting to note the total number of combinations that these stars present: for 148 nav stars, there are 10 878 combinations. For the star tracker filters of  $\pm 5^\circ$ , there are 875 combinations. Formalhaut (nav star no. 26) has the best number of combinations, which is 33.

## 4.0 REFERENCES

1. Richardson, S.; and Killen, R.: The 1980-90 Shuttle Star Catalog for Onboard and Ground Programs. JSC IN 78-FM-38, Rev. 1, January 1980.



TABLE I.- SHUTTLE STAR CATALOG 1980 STAR POSITION IN M 1950 COORDINATES

1980 STAR POSITIONS IN M1950.0 COORDINATES

ID	RA(+DEG)	DEC(DEG)	NAME
11	100.7316	16.6562S	SIRIUS
12	95.7107	52.6676S	CANOPUS
13	78.0333	8.2581S	RIGEL
14	278.8134	38.7382N	VEGA
15	210.0684	60.1330S	HADAR
16	23.9647	57.4905S	ACHERNAR
17	185.9527	62.8221S	ACRUX
18	78.2489	45.9459N	CAPELLA
19	270.6384	10.9014S	SPICA
20	213.3353	19.4253N	ARCTURUS
21	114.1654	5.3459N	PROCYON
22	297.0903	8.7379N	ALTAIR
23	88.1161	7.3995N	BETELGEUSE
24	80.6121	6.3060N	BELLATRIX
25	151.4258	12.2122N	REGULUS
26	343.7260	29.8891S	FORMALHAUT
27	309.9313	45.1008N	DENER
28	331.2740	47.2054S	AL NA IR
29	276.3914	49.5621N	ALKAID
30	246.5840	26.3230S	ANTARES
31	112.8513	31.9985N	CASTOR
32	68.2627	16.4087N	ALDEBARAN
33	305.4260	56.8980S	PEACOCK
34	138.1518	69.5103S	MIAPLACIDUS
35	283.0414	26.3613S	NUNKI
36	275.2130	34.4114S	KAUS AUSTRAL
37	1.4504	28.8131N	ALPHERATZ
38	13.4184	60.4464N	NAVI
39	98.7062	16.4432N	ALHENA
40	50.1854	49.6848N	MIRFAK
41	176.6233	14.8507N	DENEbola
42	233.1436	26.8808N	ALPHECCA
43	263.1539	12.5931N	RASALHAGUE
44	164.7108	56.6511N	MERAK
45	27.2247	89.0289N	POLARIS
46	177.8039	53.9728N	PHOEDA
47	183.3065	17.2643S	GIENAH
48	228.5770	9.2000S	ZUBENESCH
49	222.7061	74.3598N	KOCHAB
50	125.3720	59.3480S	AVIOR
51	250.8380	68.9392S	ATRIA
52	31.0888	23.2257N	HAMAL
53	210.9275	36.1293S	MENKENT
54	10.2720	18.2605S	DIPHDA
55	141.2924	8.4406S	ALPHARD
56	136.5385	43.2299S	AL SUHAIL
57	44.0906	40.5039S	ACAMAR
58	326.0731	16.3577S	DENER ALGEID
59	345.3384	27.8123N	SCHEAT
60	325.4323	9.6447N	ENIF
61	218.9854	60.6244S	RIGIL KENT
62	191.1956	59.4161S	BECRUX
63	104.1650	28.9028S	ADHARA
64	121.9978	47.1883S	REGOR

TABLE I.- Continued

65	83.4188	1.2322S	ANILAM
66	84.5588	1.9675S	ALNITAK
67	80.7827	28.5657N	EL NATH
68	95.1242	17.9297S	MURZIM
69	120.4563	39.6613S	NAOS
70	86.3458	9.6858S	SAIPH
71	115.5591	28.1482N	POLLUX
72	92.3625	56.3344S	MINTAKA
73	192.9605	56.2308N	ALIOTH
74	239.3428	22.4814S	OZUBA
75	130.8311	54.5254S	
76	219.6477	47.1753S	
77	204.1759	53.2132S	
78	88.9644	44.9447N	MENKLINAN
79	218.0800	41.9397S	
80	264.7561	39.0066S	
81	46.2267	40.7644N	BATEN KAITOS
82	140.1411	54.7967S	
83	200.4809	55.1856N	MIZAR
84	263.4310	42.9681S	SARGAS
85	189.6846	48.6857S	MUHLIFAIN
86	208.1013	47.0435S	
87	181.4387	50.4443S	
88	110.5292	29.2044S	ALUDRA
89	187.0942	56.8359S	GACRUX
90	240.6311	19.6705S	ACRAB
91	106.5896	26.3125S	AL WAZN
92	160.2917	64.1319S	
93	223.8112	42.9343S	
94	248.6005	10.4673S	
95	188.5443	68.8604S	
96	248.1711	28.1144S	
97	2.6642	14.9755N	ALGENIB
98	165.1625	62.0208N	DUBHE
99	183.1185	58.4710S	
100	232.9499	41.0005S	
101	244.5361	25.4750S	
102	138.9377	59.0650S	SCUTULUM
103	345.5576	14.9355N	MARKAB
104	58.6232	39.8670N	
105	1.6327	58.8727N	CAPH
106	84.4592	34.1000S	PHACT
107	256.8773	15.6640S	SABIK
108	238.9553	25.9719S	
109	89.0784	37.2104N	
110	261.9925	49.8396S	
111	252.1195	37.9639S	
112	319.3493	62.3737N	ALDERAMIN
113	284.8577	29.9536S	ASCELLA
114	83.6637	21.1137N	
115	154.3073	20.0940N	ALGEIBA
116	305.1079	40.0956N	SADIR
117	167.8542	20.7966N	ZOZCA
118	94.5983	30.0400S	
119	105.2342	23.7592S	
120	206.6485	42.2257S	
121	190.7973	67.8350S	
122	111.1096	8.3913N	GOMEISA
123	82.6308	17.8567S	ARNEB

TABLE I.- Concluded

124	20.6362	59.9757N	RUCHBACH
125	57.7460	31.7366N	
126	27.9688	20.5635N	SHERATAN
127	322.0061	10.3412N	ALPHIRK
128	16.7330	35.3552N	MIRACH
129	223.9743	41.9052S	
130	199.4411	36.4499S	
131	193.4204	38.5885N	COR CAROLI
132	339.9241	47.1467S	
133	54.6391	47.6291N	
134	76.3468	5.1501S	KURSA
135	295.8530	45.0081N	
136	30.2055	42.0904N	ALMACH
137	222.0262	15.8359S	ZUBENELGENUB
138	327.7277	37.6012S	
139	228.5511	68.4972S	
140	9.4145	56.2634N	SCHEDAR
141	186.8165	16.2384S	ALGORAB
142	220.7703	27.2840N	IZAR
143	268.8507	51.4937N	ELTAMIN
144	251.7239	34.2066S	
145	189.7765	1.1756S	
146	285.7778	13.7867N	
147	208.0753	18.6445N	MUFRID
148	173.3656	62.7432S	
149	311.0502	33.7846N	
150	5.9564	42.5808S	ANKAA
151	29.3034	61.8123S	
152	146.4631	64.8394S	
153	230.1970	72.0121N	
154	121.3526	24.1585S	
155	31.6415	34.7513N	
156	286.6975	21.1053S	
157	237.6757	63.2819S	
158	249.8454	31.6954N	

TABLE II.- TWO-STAR COMBINATION OF 148 NAV STARS

SIRIUS	CANOPUS	RIGEL	VEGA	HADAR	ACHERNAR	ACRUX	CAPELLA	SPICA	ARCTURUS	PROCYON	ALTAIR	BETELGEUSE	BELLATRIX	REGULUS	FORMALHAUT	DENEK	AL NAIR	ALKAID	ANTARES
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
11	36.2	23.7	157.9	84.8	66.3	73.1	65.8	96.2	116.3	25.7	162.2	27.1	36.4	57.8	103.6	142.5	101.7	112.7	125.7
12	36.2	46.7	165.9	55.6	39.4	40.1	99.7	90.2	122.6	60.1	135.8	60.4	60.4	80.5	76.5	156.5	65.5	136.1	97.0
13	23.7	46.7	144.3	101.9	64.3	90.6	54.2	119.8	135.3	36.5	141.4	10.6	14.8	75.8	89.6	122.2	55.1	120.5	143.7
14	157.9	165.9	144.3	113.7	129.6	129.1	93.3	87.8	59.1	133.7	34.2	132.6	132.9	109.3	91.4	23.8	97.8	51.0	71.7
15	34.8	55.6	101.9	113.7	62.3	11.8	143.7	49.7	79.6	97.6	96.1	111.9	114.2	36.0	82.3	137.4	62.5	109.7	40.0
16	68.9	35.4	64.3	129.6	62.3	56.9	112.8	111.6	141.3	94.6	95.7	82.9	78.4	119.9	39.1	119.5	34.8	171.9	86.9
17	73.1	45.1	90.6	125.1	11.8	58.5	137.4	53.0	85.8	86.6	107.3	106.2	102.6	72.7	65.6	144.1	60.6	143.5	53.5
18	65.8	99.7	54.2	93.3	148.7	112.8	137.4	126.1	103.0	51.1	115.2	39.5	39.7	89.6	113.9	78.2	131.7	74.4	158.3
19	90.2	90.2	119.8	87.8	49.7	111.6	120.1	32.6	87.6	87.6	97.9	113.4	124.6	54.1	125.9	114.3	107.2	60.7	45.9
20	116.3	122.0	135.3	59.1	79.6	141.3	65.0	32.8	90.8	90.8	81.3	119.8	146.5	59.7	134.1	80.8	123.0	36.0	50.0
21	25.7	63.1	38.5	133.7	97.6	94.6	86.6	87.6	96.8	105.6	26.0	26.0	33.4	37.4	127.3	127.6	127.4	67.4	130.0
22	162.2	132.8	141.4	34.2	96.1	95.7	115.2	97.9	81.3	165.6	146.9	146.9	146.9	146.0	59.2	36.0	63.0	83.6	66.3
23	27.1	60.4	16.6	132.8	111.9	82.9	39.5	113.4	119.8	26.0	146.9	7.5	7.5	62.4	106.1	115.5	113.5	102.9	152.1
24	30.4	60.4	14.8	131.9	114.2	70.4	39.7	126.0	126.0	33.4	140.6	7.5	70.8	70.0	92.1	122.3	107.7	107.1	130.5
25	57.8	64.5	75.6	109.3	86.0	112.2	65.6	54.1	59.7	37.4	140.6	62.4	70.8	152.3	152.3	113.5	145.0	56.5	120.7
26	103.6	73.5	89.0	91.4	82.3	39.1	113.9	125.9	124.1	127.3	58.2	106.1	95.1	152.6	81.0	61.0	18.6	14.4	40.0
27	142.5	156.5	122.2	23.8	132.4	119.5	144.1	111.3	69.6	127.6	38.0	115.5	112.3	119.5	81.0	9.0	9.0	67.4	91.7
28	101.7	69.5	95.1	97.8	62.5	32.6	131.7	107.2	143.0	127.4	62.0	113.5	107.7	145.0	19.6	9.0	144.1	67.0	60.9
29	112.7	134.1	120.5	91.0	109.7	171.0	74.4	60.7	60.0	97.4	60.0	144.9	107.1	60.0	144.9	60.0	144.1	60.0	60.0
30	125.7	97.0	145.7	71.7	42.0	90.5	100.3	45.6	60.0	130.0	60.3	144.1	45.6	60.0	62.5	91.7	67.0	60.0	60.0

TABLE II.- Continued

	CASTOR	ALDEBARAN	PEACOCK	MIAPLACIDUS	NUNKI	KAUS AUSTRAL	ALPHERATZ	NAVI	ALHENA	MIRFAK	DENEbola	ALPHECCA	RASALHAGUE	MEKAK	POLARIS	PHOEDA	GIENAH	ZEDENESCH	KOCNAB	AVION
SIRIUS 11:	50.0	46.0	105.0	57.7	136.5	120.7	105.9	103.4	53.2	70.0	51.0	100.0	100.0	100.0	100.4	90.0	100.0	100.0	100.0	100.0
CANOPUS 12:	50.0	73.0	57.0	120.7	106.7	100.0	100.0	130.7	60.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
RIGEL 13:	52.2	20.5	104.2	72.1	137.7	134.5	124.9	82.2	32.1	62.0	100.4	150.0	173.4	95.1	97.7	102.0	101.9	101.9	101.9	101.9
VEGA 14:	100.1	117.5	50.0	192.5	65.2	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
HADAR 15:	120.0	120.0	40.0	120.0	50.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ACHERNAH 16:	116.0	82.5	40.1	44.5	73.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ACRUX 17:	111.0	117.1	51.5	19.8	69.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
CAPELLA 18:	30.0	30.7	149.3	123.5	152.2	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
SPICA 19:	93.9	133.5	34.0	70.4	70.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ARCTURUS 20:	58.2	130.4	107.3	103.1	61.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PROCYON 21:	26.7	46.3	127.7	70.0	150.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ALTAIR 22:	139.1	125.5	66.0	117.7	37.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BETELGEUSE 23:	33.7	21.4	122.6	64.1	150.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
DELLATYX 24:	39.5	15.8	116.5	85.2	150.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
REGULUS 25:	40.5	30.1	131.1	82.3	132.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
FORMALHAUT 26:	130.7	13.0	57.9	70.9	53.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
DENEK 27:	101.4	97.0	102.1	155.2	75.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AL NAIR 28:	147.0	100.7	100.0	62.0	43.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ALKAID 29:	66.5	104.4	133.0	125.0	101.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ANANES 30:	132.5	170.0	51.3	71.0	32.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE II.- Continued

	ATRIA	HAMAL	MENKENT	DIPHDA	ALPHARD	AL SUHAİL	ACAMAR	DENEH ALGEID	SCHEAT	ENIF	RIGIL KENT	BEGRUX	ADHARA	REGOR	ANILAM	ALNITAK	EL NATH	MARZIM	NAOS	SAITH
11:	91.8	78.9	95.6	85.3	40.3	40.3	54.1	124.4	119.8	136.0	88.4	75.9	12.6	35.2	23.0	21.7	49.2	5.5	28.8	15.6
12:	57.0	94.3	74.9	72.8	57.5	28.5	36.6	98.5	123.9	121.3	56.0	49.1	24.6	17.7	52.4	51.5	82.3	34.7	21.2	43.6
13:	102.6	55.7	117.3	66.4	62.5	61.6	44.1	108.3	96.2	113.5	104.6	94.3	32.1	53.9	8.8	9.0	36.9	19.2	49.2	8.3
14:	109.7	91.4	97.6	102.4	131.4	151.4	138.5	70.6	55.5	50.7	110.7	121.5	169.2	161.1	139.9	141.0	110.6	158.9	163.3	146.9
15:	19.1	143.1	24.0	100.0	72.2	45.8	78.7	88.0	135.9	110.8	4.4	5.5	72.6	49.6	106.2	105.0	133.8	86.1	56.1	97.3
16:	49.1	80.9	86.2	40.5	96.9	94.7	21.3	59.2	91.3	84.2	61.3	62.7	60.8	55.4	73.1	73.0	96.3	64.5	60.4	67.2
17:	25.9	137.0	30.8	98.8	63.1	34.3	72.3	94.9	142.5	119.4	15.0	4.2	60.8	37.9	94.6	93.4	122.0	74.5	44.3	85.7
18:	156.7	44.1	143.6	88.7	78.1	103.1	91.7	117.0	72.3	96.4	152.9	139.2	78.5	106.7	47.4	48.2	17.5	65.7	93.7	56.1
19:	66.3	164.2	26.9	149.1	58.5	63.8	124.2	119.5	142.9	125.7	51.5	49.0	90.3	74.3	116.4	115.1	121.3	101.1	75.5	111.5
20:	92.4	137.3	55.6	158.2	76.2	94.1	157.0	116.3	113.8	107.1	60.2	80.9	115.6	105.0	127.7	127.0	113.6	121.8	104.4	128.0
21:	110.3	81.5	98.6	104.8	30.4	52.6	78.6	146.8	120.6	145.4	101.9	88.1	35.6	53.0	31.4	30.5	39.2	29.9	45.6	31.5
22:	84.0	90.2	92.1	77.1	156.1	141.5	106.6	38.1	49.2	28.0	91.9	105.6	156.5	141.3	145.7	146.9	128.8	136.8	148.7	149.6
23:	117.4	56.9	120.7	80.9	55.3	67.0	62.7	122.8	97.7	120.4	115.5	103.0	33.5	62.3	9.8	10.0	22.3	26.3	55.9	17.2
24:	117.0	50.5	125.7	73.6	62.3	70.7	57.6	115.3	91.7	113.5	117.4	103.8	41.9	64.8	8.0	9.2	22.3	28.2	59.0	17.0
25:	104.6	111.7	74.0	142.1	23.0	57.1	111.0	173.4	137.8	157.3	90.1	70.5	61.4	65.0	68.6	67.9	67.3	63.2	59.5	68.3
26:	63.3	69.9	100.5	26.8	136.0	102.7	49.5	21.1	57.7	43.3	78.9	87.8	98.3	94.3	97.8	98.4	109.4	98.5	95.5	95.9
27:	122.1	67.7	120.5	81.7	142.0	174.1	115.9	63.2	32.9	37.5	146.5	141.5	154.0	174.1	120.1	121.5	93.8	140.3	171.3	126.5
28:	43.5	88.0	61.1	43.0	123.6	88.0	51.0	31.1	70.1	57.1	59.1	60.5	52.5	82.2	103.9	104.1	123.4	97.7	86.7	55.2
29:	122.9	107.1	85.8	146.1	80.9	111.0	164.6	121.5	94.4	100.5	116.7	109.7	119.2	121.0	111.7	111.6	88.2	117.3	116.9	116.6
30:	42.7	147.7	31.8	109.5	99.7	82.4	116.0	73.6	109.1	84.5	39.1	50.1	114.0	51.2	160.0	146.8	167.2	127.8	97.0	139.2

TABLE II. - Continued

	POLLUX	MINTAKA	ALIOTH	DZUBA	MENKLINAN					BATEN KAITOS					MIZAR	SARGAS	MUHLIFAIN					ALUBA	GACRUX	ACRAB
	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90				
SIRIUS 11:	47.0	24.4	105.0	123.7	44.4	96.0	84.5	62.5	97.8	122.4	76.5	43.6	109.1	118.3	76.9	84.1	71.4	15.4	74.1	120.4				
CANOPUS 12:	82.7	53.5	134.7	98.5	20.7	69.3	58.5	97.8	73.1	87.8	102.6	25.9	137.8	83.8	55.3	64.9	50.1	25.9	48.9	101.5				
RIGEL 13:	51.4	9.0	110.6	144.2	62.3	115.0	103.6	54.1	117.9	132.3	57.1	67.4	114.9	128.5	97.7	109.2	92.0	37.0	93.2	147.2				
VEGA 14:	111.3	138.7	56.5	71.5	153.3	100.8	112.2	95.8	97.7	78.8	87.2	148.1	52.9	82.9	117.5	106.4	123.1	166.4	122.5	68.5				
HADAR 15:	116.3	107.4	117.2	42.9	40.5	14.1	7.6	142.6	18.8	39.7	158.2	36.2	115.6	36.0	16.4	13.1	18.7	60.4	12.4	45.9				
ACHERNAR 16:	114.3	73.3	173.9	94.7	53.4	74.5	69.3	115.8	79.9	70.9	100.0	56.5	177.0	68.0	73.2	75.4	70.5	63.9	64.9	97.0				
ACRUX 17:	106.5	95.9	119.2	53.7	28.8	24.4	13.5	131.9	28.1	51.0	147.6	24.4	118.6	47.3	14.3	20.1	12.6	57.7	6.0	56.8				
CAPELLA 18:	34.2	46.4	64.2	152.0	109.9	153.7	145.1	7.6	151.1	171.6	23.7	113.5	67.8	175.3	135.0	146.1	130.9	80.6	130.4	150.0				
SPICA 19:	90.9	117.6	67.4	38.7	69.5	39.7	42.4	113.0	34.6	63.1	142.6	64.3	66.1	62.8	38.9	36.7	42.6	84.8	47.1	35.5				
ARCTURUS 20:	87.5	128.3	39.8	49.0	101.5	66.8	73.1	98.2	61.5	75.7	118.6	96.6	37.1	77.5	71.3	66.6	75.3	110.2	79.4	47.4				
PROCYON 21:	22.8	32.3	79.3	124.4	61.5	104.4	94.3	45.3	103.9	137.1	69.9	63.9	83.5	133.6	84.6	96.6	80.0	34.7	85.3	126.1				
ALTAIR 22:	143.1	144.4	90.4	64.6	132.9	88.0	98.7	120.6	87.8	56.4	98.4	130.4	86.6	60.1	106.0	95.7	112.9	158.6	108.2	62.4				
BETELGEUSE 23:	33.2	9.6	92.0	148.5	71.5	122.8	111.3	37.6	124.0	148.2	50.0	75.7	96.3	144.2	103.2	115.6	97.8	42.5	101.1	150.7				
BELLATRIX 24:	39.6	6.9	96.8	153.9	73.8	126.2	114.6	39.3	128.2	147.1	46.1	78.4	101.1	143.3	107.3	119.5	101.7	45.7	104.3	156.4				
REGULUS 25:	37.0	69.6	54.4	92.8	69.0	84.8	79.3	62.0	81.6	115.7	93.2	67.7	57.4	114.3	69.6	77.8	67.9	57.2	75.1	93.4				
FOHALLAHUT 26:	138.2	97.3	146.6	90.5	91.0	88.0	89.8	120.9	92.5	63.7	91.3	92.9	143.7	63.5	98.1	93.3	98.1	102.1	91.0	91.0				
DENEK 27:	105.6	118.7	65.7	93.1	170.6	121.5	133.0	82.9	119.4	93.4	66.2	168.3	63.4	97.3	140.1	128.1	145.7	157.9	143.4	90.2				
AL NAIR 28:	146.4	103.9	153.1	75.0	76.8	68.4	70.0	137.9	73.1	47.8	110.2	77.6	148.9	46.6	78.5	73.5	78.9	95.2	71.8	76.1				
ALKAID 29:	69.5	111.6	10.5	77.8	121.7	97.4	102.8	71.0	92.1	102.4	88.0	118.1	6.7	105.1	99.3	96.6	102.3	115.4	107.6	75.6				
ANTARES 30:	136.7	149.3	94.2	7.6	82.2	29.7	41.3	154.1	28.1	19.8	157.3	77.5	98.5	21.6	49.0	36.6	54.4	110.3	51.7	8.6				

TABLE II.- Continued

	AL MAZM				ALGENIB				DUBHE				SCUTULUM				MARKAB				CAPHI				PHACT				SABIK																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			</



TABLE II.- Continued

	ALDERMIN	ASCHELLA	ALGEIBA	SADIR	ZOZCA	117	118	119	120	121	122	ARNEB	RUCHBACH	SHERATAN	ALPHIRK	MIRACH	128	129	130
SIRIUS 11:	119.1	126.9	133.2	41.3	64.2	148.4	75.7	14.5	8.3	90.1	74.6	27.1	17.3	99.5	63.6	80.5	120.8	94.8	101.5
CANOPUS 12:	87.1	155.2	97.0	74.5	88.6	156.4	96.2	22.6	29.8	68.0	44.3	62.5	36.3	127.6	90.7	93.7	152.8	111.4	75.4
ALCUL 13:	133.4	110.3	133.9	29.9	80.1	127.5	92.8	26.7	30.3	111.2	90.7	36.9	10.6	81.8	44.4	57.0	106.3	72.3	120.9
VEGEL 14:	80.5	34.0	68.9	118.5	101.5	20.3	92.2	170.6	164.1	104.1	124.7	131.5	154.8	62.5	99.8	91.1	38.7	74.1	94.8
HALEA 15:	34.4	147.6	56.9	126.0	92.0	126.3	87.9	75.6	76.5	18.0	11.3	101.7	91.3	175.3	146.2	140.4	151.6	153.8	20.1
ACHERNAR 16:	76.3	129.8	69.7	92.9	128.1	117.6	134.9	54.8	65.5	80.3	54.3	95.5	58.4	117.5	93.7	78.1	135.2	93.0	79.2
ACRAA 17:	46.2	159.0	67.5	114.3	86.6	138.0	84.8	64.2	64.8	23.9	5.4	90.7	80.1	172.4	135.1	135.1	161.5	151.7	30.5
CAPELLA 18:	170.8	61.3	153.8	25.2	66.2	84.3	75.0	77.4	73.9	143.4	140.0	46.9	63.9	36.0	21.3	43.1	55.0	46.7	155.2
SPICA 19:	53.2	112.7	79.6	118.9	55.1	108.0	45.2	98.1	90.5	31.8	57.3	91.1	112.4	130.9	140.0	160.0	110.5	155.3	37.1
ARCTURUS 20:	68.0	80.0	84.7	116.2	55.2	78.9	42.6	124.0	113.7	62.0	88.8	98.6	133.4	99.9	123.7	139.7	77.8	123.0	62.1
PROCYON 21:	129.8	109.6	153.9	33.5	41.7	133.5	54.3	40.0	30.4	95.4	90.0	4.3	38.8	87.1	58.8	84.6	102.0	92.9	108.3
ALTAIR 22:	62.8	56.0	40.4	135.6	133.4	32.2	122.0	150.1	161.2	96.2	104.2	161.9	145.3	79.2	110.4	87.8	63.6	76.5	83.6
BETELGEUSE 23:	146.2	100.0	152.5	14.4	65.2	121.5	77.8	38.0	35.4	115.9	101.6	22.8	25.8	72.4	37.3	59.5	94.3	70.6	128.0
BELLATRIX 24:	147.4	98.2	147.1	15.1	72.6	118.1	85.2	38.7	38.5	120.5	103.4	30.3	24.2	69.9	33.2	52.9	93.2	65.1	131.8
REGULUS 25:	105.8	104.8	133.5	65.1	8.4	122.3	17.9	69.1	57.7	74.3	84.9	39.8	74.2	97.8	86.7	115.5	97.2	116.0	85.6
FORMALHAUT 26:	73.3	94.3	50.4	108.6	167.0	78.6	170.2	91.0	102.4	97.8	80.2	126.4	88.6	94.9	93.4	66.0	101.4	72.3	89.3
DENEBS 27:	98.0	18.1	78.4	101.5	111.1	6.1	105.6	148.5	150.7	126.6	141.8	123.9	132.3	43.1	79.1	67.3	25.9	50.5	115.9
AL NAIR 28:	56.5	110.0	39.4	120.4	152.8	90.4	150.4	87.5	97.8	78.0	61.2	128.4	90.6	114.5	110.5	84.7	117.7	92.1	70.1
ALKAID 29:	96.4	56.2	105.5	93.0	50.5	65.5	41.9	126.1	114.9	91.8	118.0	87.0	125.2	70.4	94.1	109.9	51.5	94.7	92.8
ANTARES 30:	12.5	105.6	33.8	163.5	100.7	85.8	89.6	117.6	117.5	36.2	53.1	134.2	133.2	134.1	170.6	144.2	110.0	136.7	24.2

TABLE II.- Continued

	COR CAROLI	131	132	133	134	135	136	ALMACH	ZUBENELGENUB	137	138	139	140	SCHEGAR	ALGORAB	IZAR	ELTAMIN	143	144	145	146	MURRID	147	148	149	150	ANKAA
SIRIUS	11:	102.4	97.1	76.3	26.5	148.9	87.4	113.6	110.0	87.1	104.5	81.6	123.6	143.9	122.1	88.7	174.3	111.2	67.3	147.9	62.2						
CANOPUS	12:	124.0	66.2	106.2	50.1	164.8	110.3	97.4	79.1	53.9	129.6	77.8	132.3	175.6	90.6	91.5	140.3	118.2	39.9	148.6	57.3						
RIGEL	13:	114.9	89.4	59.5	3.5	130.9	66.6	137.0	100.6	100.5	85.4	105.4	139.9	135.9	137.1	111.3	152.2	130.5	85.0	125.1	71.3						
VEGA	14:	63.9	101.7	85.2	140.7	14.1	78.0	76.1	88.6	113.5	58.9	101.6	49.2	14.5	77.1	90.0	25.7	63.6	130.7	26.3	113.3						
HAIRUK	15:	99.7	65.2	161.0	105.4	126.0	162.0	45.1	69.8	11.5	168.5	47.0	87.9	121.2	37.3	61.0	95.0	78.8	17.5	124.1	75.4						
ACULANNA	16:	159.9	28.2	108.2	66.3	125.7	99.7	105.2	41.3	52.7	114.4	104.9	147.6	143.3	79.9	120.2	106.0	141.0	57.4	109.7	18.7						
ACROA	17:	101.6	68.1	149.3	94.2	137.7	154.9	53.3	75.0	18.0	173.2	46.6	94.3	131.4	49.1	61.7	106.7	83.3	5.8	155.5	74.6						
CAPRELLA	18:	77.5	126.5	15.1	51.1	83.2	34.2	137.4	129.2	152.9	42.5	114.4	99.2	82.1	167.3	105.7	115.3	101.1	31.8	87.1	109.3						
SPICA	19:	49.9	111.6	133.4	122.3	101.4	147.7	21.4	110.7	66.4	133.8	14.5	42.9	85.5	51.9	14.5	88.0	29.4	55.1	112.9	124.9						
ARCTURUS	20:	25.8	128.6	110.2	135.8	71.2	116.4	36.3	120.8	88.6	101.7	44.2	10.4	53.7	64.9	31.0	69.2	5.8	86.0	85.4	147.3						
PROCYON	21:	78.3	122.7	65.7	39.2	129.6	81.9	108.6	135.6	103.7	93.6	75.0	102.1	119.2	131.3	75.8	159.1	92.0	81.3	137.7	107.0						
ALTAIR	22:	95.0	67.6	101.4	139.4	36.3	86.4	78.3	54.5	90.5	73.0	111.8	74.0	48.6	60.7	107.3	12.2	86.3	112.8	28.2	80.8						
BETELGEUSE	23:	97.1	107.8	49.2	17.2	122.0	61.5	134.2	118.4	113.6	77.6	100.4	122.5	121.1	149.2	101.7	152.5	115.3	94.4	122.1	89.3						
BELLATRIX	24:	103.5	101.9	46.8	12.2	119.8	57.1	141.0	111.9	114.3	74.4	107.3	128.8	121.8	150.9	109.2	147.9	122.5	96.8	117.7	83.1						
REGULUS	25:	45.6	144.3	85.4	76.6	114.4	103.5	75.3	154.4	96.7	104.6	45.1	66.1	96.6	105.3	40.4	127.8	54.8	76.9	130.1	137.4						
ALHAIK	26:	154.1	17.5	100.3	89.7	86.6	83.7	107.6	15.3	70.8	88.9	128.8	130.4	104.4	75.2	140.2	70.8	138.3	87.1	73.8	21.9						
DENEK	27:	78.7	95.9	66.4	118.7	9.9	55.7	99.7	84.2	128.3	38.0	124.6	70.5	27.7	95.2	111.7	37.4	84.9	149.9	11.1	100.9						
AL HAIK	28:	148.4	5.9	119.4	96.3	97.3	103.4	90.9	10.0	51.1	108.3	109.0	123.3	112.2	59.0	121.1	73.3	125.9	68.7	83.0	24.6						
ALKAID	29:	14.4	145.5	79.7	118.9	57.1	88.3	66.8	137.0	119.2	73.2	68.0	24.6	38.5	92.9	52.7	72.7	30.9	115.3	73.7	164.3						
ANNAHLS	30:	81.8	73.2	156.6	147.1	84.3	146.4	25.1	67.7	43.5	129.7	56.1	59.1	80.2	9.0	60.6	55.3	58.5	59.2	65.7	91.4						

TABLE II.- Continued

	151	152	153	154	155	156	157	158
SIRIUS 11:	66.6	57.1	117.4	20.7	83.2	141.8	93.4	148.2
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CANOPUS 12:	35.4	26.0	152.6	34.5	103.6	105.6	60.3	151.9
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RIGEL 13:	64.2	73.5	114.0	44.3	61.4	139.3	106.6	155.4
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VEGA 14:	132.9	142.2	41.0	156.0	83.8	60.3	107.1	24.6
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BALAB 15:	58.1	26.5	132.9	68.6	154.6	65.2	13.3	97.5
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ACHERUAR 16:	5.1	50.2	162.0	73.6	92.5	76.1	56.5	139.6
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ACHUX 17:	54.1	17.2	138.2	57.1	147.7	76.1	22.8	107.2
	-----	-----	-----	-----	-----	-----	-----	-----
CAPELLA 18:	114.7	122.7	60.4	80.3	36.7	146.0	159.2	102.0
	-----	-----	-----	-----	-----	-----	-----	-----
SPICA 19:	107.0	65.4	85.2	75.9	154.1	82.5	58.6	63.5
	-----	-----	*****	-----	-----	-----	-----	-----
ARCTURUS 20:	137.5	98.3	53.5	99.5	125.8	82.4	84.9	34.9
	-----	-----	-----	-----	-----	-----	*****	-----
PROCYON 21:	92.3	74.1	92.7	30.3	80.8	162.7	109.3	123.9
	*****	-----	-----	-----	-----	-----	-----	-----
ALTAIR 22:	98.7	120.2	74.7	164.1	88.7	31.5	84.8	49.4
	-----	-----	-----	-----	*****	-----	-----	-----
BETELGEUSE 23:	82.5	84.0	96.8	45.2	58.4	157.4	120.0	137.2
	-----	*****	-----	-----	-----	-----	-----	-----
BELLATRIX 24:	78.7	85.8	99.2	50.0	53.2	150.7	120.6	140.6
	-----	*****	-----	-----	-----	-----	-----	-----
REGULUS 25:	115.6	77.1	74.9	46.8	106.2	136.4	99.2	90.6
	-----	-----	-----	-----	-----	-----	-----	*****
FOHMAHAUT 26:	43.5	84.3	125.5	112.4	78.8	51.7	70.3	108.2
	-----	*****	-----	-----	-----	-----	-----	-----
DEHEB 27:	124.3	158.3	44.6	157.9	60.8	69.5	122.4	47.8
	-----	-----	-----	-----	-----	-----	-----	-----
AL NAIR 28:	35.2	67.9	137.6	103.7	98.2	44.3	50.5	107.4
	-----	-----	-----	-----	-----	-----	-----	-----
ALRAID 29:	167.6	123.4	24.9	105.1	95.6	99.9	115.5	36.8
	-----	-----	-----	-----	-----	-----	-----	-----
ANTARES 30:	86.9	70.5	99.0	106.9	148.9	37.0	37.4	58.1
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TABLE II.- Continued

	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
SIRIUS	50.0	86.0	52.2	108.1	120.8	116.0	111.0	30.0	93.9	88.2	26.7	139.1	33.7	39.5	40.5	136.7	101.4	147.2	60.3	135.5
CANOPUS	46.0	73.0	26.5	117.9	128.3	82.5	117.1	30.7	133.5	130.4	46.3	125.5	21.4	15.8	80.1	93.5	97.0	106.7	104.4	176.0
RIGEL	103.6	67.8	104.2	98.2	45.5	40.1	51.5	149.3	88.8	107.3	127.7	66.0	122.6	118.5	131.1	37.9	102.1	18.4	133.9	51.3
VEGA	57.7	25.7	72.1	142.9	29.9	44.5	19.8	123.5	70.4	103.1	76.6	117.7	84.1	85.2	82.3	78.9	155.2	62.9	129.0	71.6
HADAR	136.9	100.7	137.7	65.2	59.0	73.5	69.9	152.2	78.4	81.6	156.5	37.7	156.3	150.7	132.5	53.0	75.5	43.0	101.8	34.6
ALDEBARAN	128.7	92.9	134.3	73.2	48.5	70.5	59.5	162.7	71.2	79.7	146.1	47.9	152.2	148.8	124.6	57.1	85.5	43.3	103.7	25.9
PROCYON	105.9	115.0	82.4	67.1	143.2	88.4	145.9	61.0	154.7	122.8	107.0	63.4	83.5	77.5	129.8	61.1	43.4	80.7	98.5	123.0
ALTAIR	103.1	130.7	85.2	59.1	171.8	118.2	175.7	39.6	130.2	98.5	90.6	75.7	76.0	73.4	100.0	93.6	39.5	112.9	69.5	130.6
ALHENA	33.2	69.2	32.1	124.8	114.8	95.9	103.3	34.1	104.4	106.4	18.8	148.9	13.7	20.4	51.1	119.5	112.2	127.1	88.5	148.6
ALFAK	79.9	109.4	62.8	81.7	164.5	109.3	152.9	19.1	134.2	109.3	69.3	97.8	52.8	50.3	87.8	99.0	62.7	118.4	78.7	153.4
ALPHACA	81.2	96.4	100.4	89.9	79.7	132.7	78.0	85.0	35.1	35.3	62.0	116.5	85.7	94.2	24.6	160.8	106.6	141.4	42.3	79.4
RASALHAGUE	134.9	139.3	150.0	39.7	89.1	143.1	97.2	103.7	49.2	19.6	112.8	62.9	131.8	137.5	77.2	119.8	62.3	114.7	30.6	54.6
MERAK	162.5	138.7	173.4	29.6	84.1	116.9	95.5	121.3	66.4	48.2	144.3	33.5	159.4	160.9	107.9	88.3	51.2	85.0	59.1	42.1
POLARIS	90.5	123.0	95.1	69.7	122.1	158.9	120.6	51.4	73.8	51.6	64.6	103.8	78.5	81.5	45.6	153.2	74.2	167.5	25.6	107.5
PHOLDA	106.4	142.3	97.7	51.6	151.1	146.5	153.7	43.5	101.9	71.5	84.6	61.2	82.1	83.1	78.3	119.2	44.7	136.6	41.4	117.1
GIENAH	96.1	126.4	102.4	65.3	117.0	165.0	117.0	59.1	67.7	43.9	70.4	99.3	83.8	89.1	46.7	153.8	72.9	162.0	18.1	99.7
ZEBENLSCH	78.3	74.9	101.9	104.9	47.0	103.3	45.6	112.7	16.0	47.1	71.9	115.2	97.1	104.0	43.1	129.2	127.6	109.4	69.9	59.9
KUCHAB	122.3	106.3	145.9	66.9	52.8	110.3	61.7	135.3	27.6	32.3	114.9	70.5	140.9	148.1	79.6	106.5	90.5	91.7	61.9	24.2
AVIOR	114.4	149.8	110.9	44.0	134.8	161.7	139.3	57.3	86.4	55.2	89.7	77.4	93.6	96.1	73.2	126.9	46.3	139.9	25.7	101.9
	46.3	17.7	62.3	153.4	39.7	47.8	28.4	112.2	73.1	105.6	65.3	129.0	73.0	74.6	74.6	85.3	165.5	71.4	127.1	61.7

TABLE II.- Continued

CASTOR	31	32	ALDEBARAN	33	PEACOCK	34	MIAPLACIDUS	35	NUNKI	36	KAUS AUSTRAL	ALPHERATZ	37	NAVI	ALHENA	38	MIRFAK	40	DENEbola	41	ALPHECCA	42	RASALHAGUE	43	MERAK	44	POLARIS	45	PHOEDA	46	GIENAH	47	ZEBENESCH	48	KOCHAB	49	AVIOR	50
31:		43.2	153.6	103.2	169.8	165.1	90.9	66.9	20.2	49.0	60.1	98.2	127.1	43.1	58.0	50.2	83.5	116.6	64.4	91.9																		
32:	43.2		121.4	98.6	146.2	145.9	62.2	58.8	29.2	36.4	102.7	134.3	147.5	75.8	72.9	87.7	118.1	159.5	87.8	86.7																		
33:	153.6	121.4		53.3	34.5	30.4	97.8	128.9	134.8	136.6	123.1	103.3	77.6	158.6	146.7	150.9	91.6	75.1	142.0	63.8																		
34:	103.2	98.6	53.3			80.8	132.4	156.0	90.3	134.9	88.6	116.8	113.6	127.6	159.9	126.8	59.1	81.5	153.3	11.5																		
35:	169.8	146.2	34.5	80.8																																		
36:	165.1	149.9	30.4	71.5	10.5		103.0	123.3	161.8	143.9	105.3	73.1	48.4	129.1	124.8	121.3	81.9	49.5	114.1	83.0																		
37:	90.9	62.2	97.8	132.4	93.2	103.0		32.6	88.3	42.2	136.1	105.5	91.0	93.4	60.3	97.2	168.3	131.7	73.4	131.6																		
38:	66.9	58.8	128.9	156.0	112.9	123.3	32.6		73.4	23.2	103.5	86.9	88.7	60.7	28.6	64.9	136.2	122.5	43.8	147.4																		
39:	20.2	29.2	134.8	90.3	169.3	161.8	88.3	73.4		51.2	74.5	118.1	147.1	63.2	73.3	70.4	89.9	130.7	82.6	78.8																		
40:	49.0	36.4	136.8	134.9	133.5	143.9	42.2	23.2			100.1	103.4	111.3	60.7	39.4	67.4	130.4	139.5	55.9	124.9																		
41:	60.1	102.7	123.1	88.6	111.0	105.3	136.1	103.5	74.5	100.1																												
42:	98.2	134.3	103.3	116.8	71.7	73.1	105.5	86.9	118.1	103.4	53.7																											
43:	127.1	147.5	77.8	113.6	43.5	48.4	91.0	88.7	147.1	111.3	83.5	31.5																										
44:	43.1	79.6	158.8	127.6	127.2	129.1	93.4	60.7	63.2	60.7	42.8	56.1	84.1	****	****	34.1	75.5	83.9	28.0	120.1																		
45:	58.0	72.9	146.7	159.9	116.6	124.8	60.3	28.6	73.3	35.4	76.0	64.0	77.9	34.1																								
46:	50.2	87.7	150.9	126.8	119.8	121.5	57.2	64.9	70.4	67.4	39.1	48.4	77.1	7.9	36.9																							
47:	83.5	118.1	91.6	59.1	90.7	81.9	108.3	136.2	89.9	130.4	32.6	65.5	84.3	75.5	105.2	71.4																						
48:	116.6	159.5	75.1	81.5	54.2	49.5	131.7	122.5	130.7	139.5	56.6	36.4	40.7	83.9	100.1	76.2	4.7																					
49:	64.4	87.8	142.0	153.3	107.9	114.1	73.4	43.8	82.6	55.9	64.7	47.6	65.8	28.0	16.6	27.0	95.0	63.6	147.8																			
50:	91.9	88.7	63.8	11.5	92.3	83.6	131.6	147.4	78.8	124.9	85.0	121.9	123.6	120.1	149.5	120.9	55.1	88.7	147.6																			

TABLE II.- Continued

	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
CASTOR	31: 136.1	71.3	114.1	110.0	48.7	78.3	96.3	146.1	102.1	124.0	125.3	111.7	61.5	79.6	43.4	43.3	27.8	52.7	72.2	48.8
ALDEBARAN	32: 127.4	35.5	141.5	66.8	76.4	86.3	61.2	105.9	76.3	99.4	131.0	120.6	57.1	79.7	23.1	24.4	16.8	43.3	74.3	31.6
PLACOCK	33: 26.4	107.0	62.7	61.1	113.4	79.4	61.2	43.4	91.2	88.6	41.7	52.6	92.3	75.9	112.8	112.6	137.9	101.0	63.1	106.1
MIAPLACIDUS	34: 34.3	117.6	50.5	84.9	61.1	26.3	53.9	93.9	135.4	120.0	32.5	24.0	45.0	23.7	77.2	76.1	106.4	57.9	31.1	18.2
NUKKI	35: 46.6	115.5	61.0	79.6	129.1	103.9	93.6	41.1	80.7	54.7	54.6	68.4	124.7	104.5	146.5	146.5	160.2	135.0	111.8	40.5
KAUS AUSTRIAL	36: 37.1	123.6	51.5	83.8	118.9	93.7	91.5	48.8	90.9	64.8	44.2	58.0	116.1	94.9	142.7	142.3	166.4	127.7	102.2	135.1
ALPHUKATZ	37: 124.1	27.1	154.2	47.8	137.1	141.5	79.8	56.6	14.2	38.8	139.5	146.7	113.7	131.0	83.6	84.9	68.1	101.6	129.4	90.2
NAVI	38: 132.1	39.2	153.2	78.7	115.3	142.4	104.0	85.7	37.7	61.9	167.5	178.5	115.2	138.2	81.4	82.6	54.4	101.5	132.0	90.2
ALHENA	39: 124.7	63.4	117.4	93.7	48.9	69.0	76.2	134.7	101.8	126.9	118.9	105.4	45.7	67.0	23.2	23.1	20.5	34.6	39.1	28.6
MIRFAK	40: 158.3	30.4	160.5	76.6	97.1	119.5	90.3	98.7	53.2	79.3	167.4	155.8	92.0	115.0	58.4	59.5	31.4	78.4	108.7	67.3
DENLBOLA	41: 98.3	129.1	60.4	166.5	42.1	68.7	131.6	150.6	136.0	146.6	82.7	75.2	82.5	78.9	93.4	92.5	87.9	86.7	75.6	92.7
ALPHECCA	42: 96.7	125.5	66.4	139.7	95.5	112.6	164.5	99.9	95.0	87.7	88.3	93.0	135.2	123.4	141.2	140.9	118.5	140.4	123.6	144.3
RASALHAGUL	43: 82.0	117.7	69.3	109.9	122.6	125.0	135.9	66.6	77.3	61.0	81.2	91.9	154.5	132.6	168.6	169.3	136.8	167.3	137.4	175.7
MERAK	44: 140.0	91.1	106.7	137.1	67.9	102.7	139.1	137.3	95.5	111.8	144.8	116.0	99.6	109.8	86.3	86.3	63.2	94.3	103.5	91.8
POLARIS	45: 159.6	65.8	127.1	107.3	98.9	133.6	129.6	105.9	61.5	79.9	151.6	150.3	118.7	137.3	90.7	91.5	60.9	107.6	129.9	99.2
PHUEDA	46: 133.9	97.6	94.5	143.0	69.6	103.4	146.5	135.1	97.5	110.7	119.2	113.9	104.2	111.6	93.6	93.5	71.1	100.2	105.9	98.7
GIENAH	47: 65.9	153.2	30.9	143.8	41.8	47.2	110.9	130.2	160.4	142.5	50.3	42.5	72.5	58.0	99.1	97.8	108.9	83.1	58.4	93.7
ZLBELWSCH	48: 61.5	158.2	31.3	133.3	86.0	85.2	130.1	94.5	117.9	98.2	51.9	57.5	114.3	94.3	143.8	142.5	144.1	126.6	97.7	137.9
ROCHAB	49: 144.4	82.1	110.8	121.2	95.8	130.5	146.1	109.3	71.3	84.1	135.0	135.4	125.3	137.8	103.0	103.5	74.1	116.9	131.4	110.8
AVIOR	50: 45.9	112.0	57.4	86.3	52.3	17.5	51.9	102.4	138.3	128.0	42.6	32.1	33.7	12.3	66.6	65.5	95.3	46.9	19.7	57.6

TABLE II.- Continued

	POLLUX	MINTAKA	ALIOTH	DZUBA	MENKLINAN					BATEN KAITOS					MIZAR	SARGAS	MUHLIFAIN	ALDURA	GACRUX	ACRAB
	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
CASIOR 31:	4.5	43.3	56.6	132.0	87.9	123.7	115.9	22.6	121.3	156.2	53.1	89.9	62.9	154.4	105.7	116.1	102.2	61.2	108.5	121.9
ALDEBARAN 32:	45.0	21.6	93.9	169.6	88.5	141.2	129.7	33.4	143.7	153.2	30.9	93.4	97.8	150.5	122.8	134.9	117.3	61.2	119.3	172.0
PEACOCK 33:	150.4	113.2	144.3	58.3	68.5	50.1	52.6	154.5	54.6	31.9	128.6	67.7	140.2	29.8	61.8	55.6	63.2	93.0	56.0	59.9
NIAPLACIDUS 34:	99.0	76.3	131.8	72.8	15.3	43.8	33.3	120.0	47.8	64.7	128.4	14.7	132.5	60.6	32.1	39.9	27.8	43.3	24.5	5.9
NURRI 35:	168.7	146.7	111.7	39.8	95.6	53.2	62.7	158.3	54.6	19.9	131.4	52.8	107.4	23.0	72.6	61.1	76.8	124.0	71.3	39.4
KAUS ACSTRAL 36:	161.6	143.2	114.1	33.5	65.9	43.0	52.2	168.4	44.7	9.6	141.2	82.6	109.9	12.5	62.2	50.8	66.4	114.8	60.8	33.9
ALPHERATZ 37:	95.1	82.2	94.4	127.9	135.7	145.2	150.5	68.4	147.7	112.5	38.2	140.6	94.4	114.7	159.1	152.4	158.4	119.0	151.7	125.8
NAVI 38:	71.4	86.1	63.3	130.5	147.2	159.8	170.7	45.4	156.2	132.1	28.1	151.7	64.2	135.7	168.0	164.1	167.9	118.5	175.1	127.5
ALHENA 39:	19.5	23.3	76.7	142.5	76.1	122.9	112.3	29.7	122.6	154.4	51.2	79.4	8.1	150.5	102.9	115.1	58.1	47.1	162.8	143.7
MIRAK 40:	53.3	57.1	69.7	151.9	124.1	172.6	163.5	26.4	168.6	153.4	9.3	128.5	72.2	156.3	153.8	165.1	149.3	95.3	153.7	148.8
DLNEBOLA 41:	57.8	94.2	43.2	71.9	79.5	73.0	72.1	77.9	68.4	97.9	107.9	76.2	44.3	97.8	64.6	68.0	65.4	77.5	72.2	71.3
ALPHLOCCA 42:	98.7	141.4	41.0	49.7	118.6	75.1	84.0	101.1	70.2	72.2	112.0	113.4	36.9	75.2	85.0	77.3	89.8	129.6	92.3	47.1
RASALHAGUE 43:	128.6	167.7	68.6	42.1	124.0	71.3	82.7	122.2	66.5	51.6	116.6	119.0	64.2	55.6	68.9	77.2	94.5	149.6	93.1	39.1
HERAK 44:	44.7	86.1	15.5	100.6	114.5	113.5	114.5	46.7	108.3	126.9	69.7	113.2	19.9	129.1	107.4	109.8	108.0	97.3	114.9	98.9
POLARIS 45:	61.8	89.8	34.7	113.3	144.8	138.1	144.2	44.6	132.9	129.5	48.3	145.2	35.8	133.5	139.6	138.0	141.3	119.1	147.7	110.5
PHOEDA 46:	51.5	93.5	8.9	92.9	115.2	107.2	109.4	54.6	101.9	119.0	76.6	113.1	13.1	121.2	103.1	104.2	104.5	101.3	111.1	91.1
GIENAH 47:	79.7	100.3	73.9	52.7	54.6	42.2	39.5	105.1	38.6	72.7	136.3	49.9	73.9	71.2	31.8	36.1	33.2	66.9	39.7	54.2
ZEBELUSCH 48:	114.6	145.0	71.8	16.8	87.0	38.7	48.2	130.2	34.0	44.0	146.4	81.6	68.5	45.4	51.1	41.7	56.6	109.1	57.4	15.7
ROCHAB 49:	67.4	102.3	21.5	97.4	142.1	121.6	128.2	56.7	116.3	116.6	64.9	140.1	21.1	120.5	125.6	121.6	127.8	124.6	133.3	94.7
AVIUR 50:	87.9	67.6	127.4	82.1	5.7	52.6	41.6	160.5	50.1	76.1	119.3	5.2	129.2	72.6	37.6	47.7	32.4	31.6	31.5	85.1

TABLE II.- Continued

	AL MAZN	ALGENIB	DUBHE	SCUTULUM	MARKAB	CAPH	PHACT	SABIK												
	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110
CASFOR 31:	58.6	103.1	125.7	133.9	114.7	141.4	98.4	44.7	107.6	132.0	137.5	93.6	111.1	43.5	72.8	71.3	143.5	132.9	20.2	151.0
ALDEBARAN 32:	56.7	105.6	146.3	174.0	116.5	168.3	62.9	78.7	116.8	152.1	170.3	94.5	75.0	24.9	64.0	52.8	171.7	167.1	2.3	144.6
PELOR 33:	55.3	56.1	51.0	63.5	46.2	49.0	86.0	159.5	55.6	47.6	53.1	63.5	79.2	134.6	124.1	82.6	55.0	55.7	149.0	20.4
MIAPLACIUS 34:	47.0	10.2	48.9	87.1	17.4	70.4	118.8	132.9	21.9	53.7	71.7	10.5	122.8	123.5	158.9	45.8	84.6	69.4	112.6	20.6
RUNKI 35:	127.2	79.2	50.4	36.2	67.1	30.9	87.6	126.1	72.7	43.5	34.5	89.6	73.4	140.9	106.8	117.0	26.6	19.4	164.0	28.5
KAUS AUSTRAL 36:	118.3	69.1	40.4	34.1	57.0	23.9	96.3	129.2	62.2	33.7	27.9	79.7	83.0	150.5	117.2	110.6	25.0	32.3	174.3	16.2
ALPHERAT 37:	114.8	142.2	143.4	115.0	139.7	122.2	14.0	88.2	150.3	136.7	124.4	138.2	20.2	47.7	30.1	100.5	110.0	129.4	71.3	117.5
NAVI 38:	114.2	164.4	154.7	115.8	171.3	131.4	46.2	55.6	174.4	149.1	130.8	153.3	49.8	34.5	6.1	110.8	116.6	133.8	51.4	141.4
ALHEWA 39:	43.4	93.2	126.6	150.2	105.3	142.6	91.4	64.6	101.1	133.7	146.9	82.3	106.9	41.9	79.6	52.3	159.0	141.9	22.4	144.0
MIRAK 40:	91.0	141.5	171.9	137.9	152.3	154.4	51.8	57.0	151.7	171.1	153.4	130.3	62.3	11.5	29.1	89.1	139.7	155.3	30.4	159.6
DEMLGOLA 41:	79.5	80.0	72.2	75.7	84.1	81.4	149.7	47.9	73.5	76.3	77.4	80.0	148.3	100.6	106.2	100.0	84.9	73.1	79.2	98.4
ALPHECCA 42:	132.6	107.0	70.3	40.2	101.1	56.9	115.6	56.2	94.9	67.9	53.5	114.9	102.3	113.1	84.3	152.2	48.4	53.1	107.6	80.9
RASALHAGUE 43:	154.1	106.9	66.2	27.2	96.3	43.2	95.7	62.6	95.6	60.4	42.2	118.0	79.6	122.8	83.6	156.5	28.9	45.2	129.9	62.4
MIRAK 44:	96.3	120.8	111.2	95.4	126.7	109.8	106.9	5.4	116.1	113.2	105.8	117.5	108.4	65.3	63.7	113.0	104.2	103.4	52.1	133.1
POLARIS 45:	116.1	154.8	133.9	101.2	159.8	118.8	74.2	28.7	149.4	131.9	116.2	149.4	74.3	49.3	30.2	123.6	106.3	116.8	52.4	140.4
PHOLDA 46:	100.9	118.9	104.6	87.5	123.1	101.9	111.0	10.4	112.5	106.1	97.9	117.3	110.3	72.6	67.1	118.8	96.4	95.7	60.0	125.4
GILWAH 47:	70.8	49.4	42.8	63.5	51.7	60.2	177.6	80.6	41.2	48.6	57.1	52.7	162.8	127.4	138.4	87.4	70.1	52.1	103.6	69.7
ZEHLWESCH 48:	113.4	72.3	34.0	19.8	65.1	26.4	134.8	86.2	60.1	32.0	22.2	81.9	118.2	148.1	119.0	124.9	28.4	19.4	134.0	49.2
KOCHAB 49:	122.2	144.3	117.3	86.4	144.9	103.8	87.2	23.3	135.4	115.6	100.9	144.2	83.9	65.3	44.0	134.9	92.6	100.9	64.3	127.0
AVTUR 50:	35.5	17.0	57.9	96.8	27.7	80.7	119.2	125.2	28.9	63.4	81.6	6.9	126.7	113.4	152.0	36.7	95.3	78.8	101.1	65.3



TABLE II.- Continued

		111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	
ALDERMIN	CASOR	31:	146.4	83.2	172.5	28.2	38.8	107.0	50.0	64.4	56.2	113.4	115.1	23.7	57.7	63.7	46.3	75.1	75.5	76.5	125.5	105.9
	ALLEGARAN	32:	158.2	83.9	143.9	15.3	80.8	102.7	92.8	52.9	54.0	136.1	117.1	42.5	37.1	55.4	18.1	38.3	75.9	49.4	147.1	132.5
	PLACOCK	33:	39.4	119.6	30.5	133.0	137.5	97.0	132.4	89.2	97.6	59.9	46.4	130.2	97.2	131.0	128.1	103.2	127.8	110.0	51.7	67.5
	MIAPLACIDUS	34:	62.3	172.6	77.6	98.5	90.3	149.8	52.8	46.5	19.7	43.6	10.6	80.1	61.6	153.1	116.3	116.2	176.4	133.7	49.9	40.
	HUNKI	35:	26.5	52.4	3.5	161.5	132.6	69.6	120.9	123.0	129.8	63.0	66.5	160.5	131.5	116.3	140.3	111.8	100.6	107.7	50.3	65.9
KRAUS	AUSIRAL	36:	18.9	103.1	5.3	163.3	126.3	75.4	115.5	121.1	52.9	50.4	150.2	126.4	126.8	146.7	119.8	110.0	117.5	40.4	60.1	
	ALPHERALZ	37:	121.7	43.2	93.7	74.5	124.5	47.0	126.7	100.4	112.7	155.6	140.6	162.8	91.1	33.8	48.2	45.4	47.0	14.5	143.4	163.1
NAVI		38:	137.5	25.2	115.1	62.0	93.5	45.6	96.2	111.7	111.4	160.1	172.5	86.5	95.7	3.6	40.7	41.2	22.7	25.2	153.8	155.7
	ALHENA	39:	146.2	95.0	165.4	15.0	52.7	116.3	65.2	46.7	40.7	114.1	106.0	14.5	37.8	69.9	40.1	66.7	86.2	74.2	127.0	108.2
MIRFAK		40:	160.4	47.8	134.6	38.9	83.5	66.6	90.6	88.9	88.2	162.1	153.5	65.0	73.4	19.6	18.8	34.0	43.5	28.2	171.1	154.2
	DERIBOLA	41:	88.1	97.4	113.0	87.4	21.9	107.2	10.2	90.7	79.7	63.4	83.3	64.3	98.2	102.7	105.2	133.1	91.5	126.3	71.6	55.6
ALPILLOCA		42:	67.2	64.7	75.3	123.6	71.5	59.8	59.4	143.6	133.1	73.3	99.8	113.7	151.4	89.1	121.2	126.7	64.4	108.9	69.3	70.8
	RASALHAGUE	43:	51.6	63.6	47.4	146.3	102.8	45.9	90.4	159.6	156.3	75.4	95.2	145.2	174.7	92.1	129.4	116.4	68.0	101.1	65.3	77.4
MLKAK		44:	119.6	59.4	131.0	67.6	37.4	77.0	35.9	104.9	94.6	105.0	126.0	63.6	100.6	60.0	72.4	94.7	52.0	84.1	110.4	97.6
	POLARIS	45:	128.6	27.3	120.1	68.4	70.5	49.8	70.0	119.7	113.6	133.2	158.8	81.5	107.3	29.1	57.4	68.5	19.3	53.7	132.8	127.4
PHOLDA		46:	111.8	59.8	123.6	75.4	38.3	75.6	34.0	110.2	99.5	99.3	122.2	69.6	107.4	64.6	79.9	101.1	53.1	89.2	103.7	92.3
	GIENAH	47:	63.0	125.6	91.0	104.8	47.0	125.2	41.0	80.4	72.5	31.9	50.8	75.8	94.4	135.5	128.9	156.5	121.4	158.3	42.5	23.9
ZEBENESCH		48:	35.7	98.5	56.3	144.2	78.7	85.6	66.8	120.9	115.6	38.2	63.7	118.3	136.8	125.1	155.9	157.1	99.8	140.9	33.0	38.0
	KOCHAB	49:	114.0	33.0	111.8	81.0	64.9	49.6	60.9	128.8	120.1	117.1	143.7	87.6	119.5	44.9	73.4	84.6	26.9	66.9	116.3	111.9
AVIUR	50:	73.2	172.6	89.1	87.4	82.9	100.7	87.4	35.9	38.3	50.5	28.6	68.7	51.7	144.1	106.7	111.3	167.0	129.1	58.8	51.4	

TABLE II.- Continued

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TABLE II.- Continued

	151	152	153	154	155	156	157	158
CASIOR 31:	115.0	100.3	67.4	56.7	65.9	167.8	133.7	104.4
ALLIANTAN 32:	84.1	99.9	50.7	65.8	37.5	153.4	132.6	131.9
PEACOCK 33:	40.0	57.2	136.9	98.9	116.6	36.4	34.7	100.2
NIAPLACIUS 34:	39.4	5.7	153.5	46.4	126.0	86.6	35.8	127.0
NUNKI 35:	74.2	82.8	104.8	126.5	119.2	6.2	47.2	66.1
KAUS AUSTRAL 36:	70.2	73.0	110.9	116.4	128.6	16.7	37.0	76.3
ALPHERATZ 37:	93.4	137.9	73.7	126.6	26.2	87.6	130.5	91.2
NAVI 38:	122.9	158.5	45.1	119.6	28.3	106.7	159.4	77.0
ALHENA 39:	95.2	89.0	85.8	46.2	62.1	171.1	125.3	124.5
NIRFAK 40:	112.7	136.1	58.3	97.0	20.2	127.4	165.8	96.8
DENEBOLA 41:	127.6	82.9	65.1	66.6	120.3	113.7	91.1	68.2
ALPHECCA 42:	141.6	117.8	45.2	119.2	115.1	70.6	90.2	15.3
RASALHAGUE 43:	117.7	112.6	62.6	142.7	112.0	40.9	78.4	22.7
MERAK 44:	157.1	122.3	30.1	88.7	80.3	124.9	132.4	61.4
POLARIS 45:	150.8	155.3	18.9	114.2	54.3	111.3	154.1	59.0
PHOLDA 46:	161.8	121.2	28.4	92.0	86.8	116.0	126.1	54.6
GIEHAH 47:	98.3	53.6	94.6	57.9	149.3	95.7	59.0	80.4
ZEEENESCH 48:	107.4	78.3	81.2	101.6	150.1	57.0	54.5	45.7
KOCHAB 49:	166.6	147.6	3.2	116.3	70.6	103.7	138.0	44.8
AVIOR 50:	42.9	11.2	149.1	35.3	121.2	98.1	47.0	134.2

TABLE II.- Continued

	SIRIUS	CANOPUS	RIGEL	VEGA	HADAR	ACHERNAR	ACRUX	CAPELLA	SPICA	ARCTURUS	PROCYON	ALTAIR	BETELGEUSE	BELLATRIX	REGULUS	FORMALHAUT	DENEK	AL NAIR	ALKAID	ANANTARS
ATRIA 51:	91.8	57.0	102.0	109.7	19.1	49.1	25.9	156.7	66.3	92.4	110.3	84.0	117.4	117.0	104.8	63.3	122.1	43.5	122.9	42.7
	*****									*****		*****								
HAMAL 52:	78.9	94.3	55.7	91.4	143.1	80.9	137.0	44.1	164.2	137.3	81.5	90.2	56.9	50.5	111.7	69.9	67.7	88.6	107.1	147.7
			*****									*****						*****		
MEIKENT 53:	95.6	74.9	117.3	97.6	24.0	86.2	30.8	143.0	26.9	55.0	96.6	92.1	120.7	125.7	74.0	100.5	120.5	81.1	85.8	31.8
						*****						*****						*****		
LIPEDA 54:	85.3	72.8	66.4	102.4	100.0	40.5	98.8	88.7	149.1	158.2	104.8	77.1	80.9	73.6	142.1	26.8	83.7	43.0	146.1	109.5
	*****							*****									*****			
ALPESAKO 55:	40.3	57.5	62.5	131.4	72.2	96.9	63.1	78.1	58.5	76.2	30.4	156.1	55.3	62.3	23.0	136.0	142.0	123.6	80.9	91.7
AL SUHAIL 56:	40.3	28.5	61.6	151.4	45.8	64.7	34.3	103.1	63.8	94.1	52.6	141.5	67.6	70.7	57.1	102.7	174.9	88.6	111.0	85.4
																		*****		
ACANAR 57:	54.1	36.6	44.1	138.5	78.7	21.3	72.3	91.7	124.2	157.0	78.6	108.6	62.7	57.6	111.0	49.5	119.9	51.0	164.6	110.0
					*****			*****										*****		
DELTA ALGELD 58:	124.4	98.5	108.3	70.6	88.0	59.2	94.9	117.0	119.5	116.3	146.8	38.1	122.8	115.3	173.4	21.1	63.2	31.1	121.5	73.6
SCHEAT 59:	119.8	123.9	96.2	55.5	135.9	91.3	142.5	72.3	142.9	113.8	120.6	49.2	97.7	91.7	137.8	57.7	32.9	76.1	94.4	109.1
					*****									*****						
ENIF 60:	136.0	121.3	113.5	57	110.6	84.2	114.4	98.4	125.7	107.1	145.4	28.0	120.4	113.5	157.3	43.3	37.9	57.1	100.5	84.5
RIGEL KENT 61:	88.4	58.0	104.6	110.7	4.4	61.3	15.6	152.9	51.5	80.2	101.9	91.9	115.5	117.4	90.1	78.9	128.5	59.1	110.7	39.1
	*****											*****			*****					
BECRUX 62:	75.9	49.1	94.3	121.5	9.5	62.7	4.2	139.2	49.0	80.9	88.1	105.6	103.0	105.8	78.5	87.8	141.5	68.5	109.7	50.1
											*****					*****				
ADHARA 63:	12.6	24.6	32.1	169.2	72.6	60.6	60.8	78.5	90.3	115.0	55.0	156.5	39.5	41.9	61.4	98.1	154.0	92.9	119.2	144.0
									*****											
REGOR 64:	35.2	17.7	53.9	161.1	49.6	55.4	37.9	100.7	74.3	105.0	53.0	141.3	62.3	64.0	65.0	94.3	174.1	82.2	121.0	91.2
																			*****	
ANILAM 65:	23.0	52.4	8.8	139.9	106.2	73.1	94.6	47.4	116.4	127.7	31.4	145.7	9.8	8.0	68.8	97.8	123.1	103.9	111.7	148.0
ALNITAK 66:	21.7	51.5	9.0	141.0	105.0	73.0	93.4	46.2	115.1	127.0	30.5	146.9	10.0	9.2	67.9	98.4	121.3	104.1	111.6	146.8
EL NATH 67:	49.2	82.3	36.9	110.6	133.8	98.3	122.0	17.5	121.3	113.6	39.2	128.8	22.3	22.3	67.3	109.4	93.8	123.4	88.2	167.2
																			*****	
MURZIN 68:	5.5	54.7	19.2	158.9	86.1	64.9	74.5	65.7	101.1	121.8	29.9	156.8	26.3	28.2	63.2	98.5	140.3	97.7	117.3	127.8
					*****															
KAUS 69:	28.8	21.2	49.2	163.3	56.1	60.4	44.3	93.7	75.5	104.4	45.6	148.7	55.9	59.0	59.5	99.5	171.3	88.7	116.9	97.0
																		*****		
SAIPH 70:	15.6	43.6	8.3	148.9	97.3	67.2	65.7	56.1	111.5	128.0	31.5	145.6	17.2	17.0	6.3	95.9	128.5	99.2	116.6	139.2
							*****													

TABLE II.- Continued

	CASTOR	ALDEBARAN	PEACOCK	MIAPLACIDUS	NUNUKI	KAUS AUSTRAL	ALPHERATZ	NAVI	ALHENA	MIRFAK	DENEbola	ALPHECCA	RASALHAQUE	MERAK	POLARIS	PHOEDA	GIENAH	ZEBENESCH	KOCHAB	W109
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ATRIA	51: 136.1	127.4	26.4	34.3	46.0	37.1	144.1	155.1	124.7	158.3	96.3	96.7	62.0	140.0	159.6	133.9	65.9	61.5	144.4	45.9
HANAL	52: 71.3	35.5	107.0	117.6	115.5	123.6	27.1	39.2	63.4	30.4	129.1	125.5	117.7	91.1	65.8	97.6	153.3	158.2	82.1	112.0
MENKERT	53: 114.1	141.5	62.7	50.5	61.0	51.5	154.2	153.2	117.4	160.5	60.4	66.4	69.3	100.7	127.1	94.5	30.9	31.3	116.8	57.4
DLEPDA	54: 110.0	66.8	61.1	84.9	79.6	83.8	47.8	78.7	93.7	76.6	166.5	139.7	109.9	137.1	107.3	143.0	143.8	133.3	121.2	80.3
ALPHAKU	55: 48.7	76.4	113.4	61.1	129.1	116.9	137.1	115.3	48.9	97.1	42.1	95.5	122.8	67.9	98.9	69.6	41.8	86.0	95.8	51.3
AL SUHAIL	56: 78.3	86.3	79.4	26.3	103.9	93.7	141.5	142.4	69.0	119.5	68.7	112.6	125.0	102.7	133.6	103.4	47.2	85.2	130.3	17.5
ACANAR	57: 96.3	61.2	61.2	53.9	93.6	91.5	79.8	104.0	76.2	90.3	131.6	164.5	135.9	139.1	129.6	146.5	110.9	130.1	116.1	51.9
DEALB ALGEID	58: 146.1	105.9	43.4	93.9	41.1	48.8	56.6	85.7	134.7	98.7	150.6	99.9	68.6	137.3	105.9	135.1	130.2	94.5	109.3	102.4
SCHLAT	59: 102.1	76.3	91.2	135.4	80.7	90.9	14.2	37.7	101.8	53.2	136.0	95.0	77.3	95.5	61.5	97.5	160.4	117.9	71.3	138.3
EWIF	60: 128.0	99.4	68.6	120.0	54.7	64.8	38.8	61.9	126.9	79.3	140.6	87.7	61.0	111.8	79.9	110.7	142.5	98.2	84.1	128.0
RIGIL KENT	61: 125.3	131.0	41.7	32.5	54.6	44.2	139.5	167.5	118.9	167.4	82.7	88.3	81.2	124.8	151.6	119.2	50.3	51.9	135.0	42.8
BEGRUX	62: 111.7	120.6	52.6	24.0	68.4	58.0	148.7	178.5	105.4	155.8	75.2	93.0	91.9	118.0	150.3	113.9	42.5	57.5	135.4	34.1
ADHARA	63: 61.5	57.1	92.3	45.0	124.7	116.1	113.7	115.2	45.7	92.0	82.5	135.2	154.5	99.6	118.7	104.2	72.5	114.3	125.3	33.7
REGOR	64: 79.6	79.7	75.9	23.7	104.5	94.9	131.0	138.2	67.0	115.0	78.9	123.4	132.6	109.8	137.3	111.4	58.0	94.3	137.6	12.3
ANILAM	65: 43.4	23.1	112.8	77.2	146.5	142.7	83.6	81.4	23.2	58.4	93.4	141.2	166.6	86.3	90.7	93.6	95.1	143.6	103.0	60.6
ALNITAK	66: 43.3	24.4	112.6	76.1	146.5	142.3	84.9	82.6	23.1	59.5	92.5	140.9	169.3	86.3	91.5	93.5	97.8	142.5	103.5	65.5
EL NATH	67: 27.8	16.8	137.9	106.4	160.2	160.4	68.1	54.4	20.5	31.4	87.9	116.5	136.8	63.2	60.9	71.1	108.9	144.1	74.1	95.3
MURZIM	68: 52.7	43.3	101.0	57.9	135.0	127.7	101.6	101.5	34.6	78.4	86.7	140.4	167.3	94.3	107.6	100.2	83.1	126.6	116.9	46.9
NAUS	69: 72.2	74.3	83.1	31.1	111.6	102.2	129.4	132.0	59.8	106.7	75.6	123.6	137.4	103.5	129.9	105.9	58.4	97.7	131.4	19.7
SALPH	70: 48.8	31.6	106.1	68.2	140.5	135.1	90.2	90.2	28.6	67.3	92.7	144.3	175.7	51.8	95.2	98.7	93.7	137.9	110.8	57.6

TABLE II.- Continued

	ATRIA	HAMAL	MENKENT	DIPHDA	ALPHARD	AL SUHAIL	ACAMAR	DENEK ALGEID	SCHLAI	ENIF	RIGIL KENT	BEGRUX	ADHARA	REGOR	ANILAM	ALNITAK	EL NATH	MURZIM	NAOS	SAIPH
51:	128.5	39.4	82.8	89.0	57.9	66.8	69.5	117.4	93.6	15.0	26.4	75.2	57.9	139.3	108.5	139.2	91.4	65.2	109.6	
52:	126.5	107.1	46.2	111.8	110.0	64.5	74.8	41.3	63.9	142.2	141.2	87.5	107.4	56.4	57.6	44.7	74.8	104.2	44.3	
53:	39.4	167.1	122.2	68.6	55.8	102.4	99.4	140.6	115.4	25.0	26.0	63.2	40.4	42.1	58.0	69.0	45.8	36.5	54.2	
54:	82.8	46.2	122.2	124.0	161.2	36.5	42.1	52.0	52.3	97.8	162.3	84.5	90.5	73.6	74.5	82.6	79.8	92.9	73.9	
55:	89.0	111.8	68.6	124.8	35.0	89.5	154.8	150.2	175.7	76.6	63.2	40.4	42.1	58.0	56.8	69.0	45.8	36.5	54.2	
56:	57.9	116.6	55.8	101.2	35.0	89.5	154.8	150.2	175.7	76.6	63.2	40.4	42.1	58.0	56.8	69.0	45.8	36.5	54.2	
57:	68.8	64.9	102.4	36.5	89.9	65.1	70.5	87.4	67.8	76.6	76.5	49.8	54.2	53.0	53.1	77.0	49.1	56.4	48.4	
58:	69.5	74.8	99.4	42.1	154.8	119.8	70.5	48.0	26.0	83.9	95.9	119.3	112.9	115.8	116.6	119.1	119.2	113.9	215.0	
59:	117.4	41.3	140.6	52.0	150.2	152.2	87.4	48.0	26.1	131.0	143.8	126.8	141.2	97.7	95.1	81.4	115.4	141.3	104.2	
60:	33.6	63.9	115.4	52.3	175.7	145.5	87.4	26.1	106.4	106.4	119.0	130.9	137.5	117.8	129.0	106.9	130.6	142.5	121.8	
61:	15.6	142.2	25.0	97.8	76.6	49.9	78.8	83.9	131.6	106.4	13.8	63.9	63.9	41.0	97.9	96.7	124.6	77.7	47.1	89.1
62:	26.4	141.2	26.6	102.3	63.2	36.5	76.5	95.9	143.8	119.6	13.8	63.9	63.9	41.0	97.9	96.7	124.6	77.7	47.1	89.1
63:	79.2	87.5	85.4	84.5	40.4	29.6	49.8	119.3	126.8	136.9	76.1	63.9	63.9	41.0	97.9	96.7	124.6	77.7	47.1	89.1
64:	57.9	107.4	63.7	90.5	42.1	11.0	54.2	112.9	141.2	137.5	53.2	41.0	22.9	56.8	55.6	84.4	36.6	7.4	48.1	
65:	109.3	56.4	118.6	73.6	58.0	63.1	53.0	115.8	97.7	117.8	109.4	97.9	34.0	56.8	1.4	29.9	20.3	51.2	8.9	
66:	108.5	57.8	117.3	74.5	56.8	61.8	53.1	116.6	99.1	119.0	108.3	96.7	32.8	55.6	1.4	30.7	19.0	50.0	7.9	
67:	139.2	44.7	137.7	82.6	69.0	88.1	77.0	119.1	81.4	106.9	137.5	124.6	61.7	84.4	29.9	30.7	48.5	77.7	38.6	
68:	91.4	74.8	98.8	79.8	45.8	43.1	49.1	119.2	115.4	130.6	82.5	77.7	13.7	36.6	20.3	19.0	48.5	31.0	11.9	
69:	65.2	104.2	68.1	92.9	36.5	12.5	56.4	118.9	141.3	142.5	59.8	47.1	17.3	7.4	51.2	50.0	77.7	31.0	42.8	
70:	100.0	63.3	110.7	73.9	54.2	54.9	40.4	115.4	104.2	121.6	100.4	89.1	25.0	48.1	8.9	7.9	38.6	11.9	42.8	

TABLE II.- Continued

	POLLUX	MINTAKA	ALIOTH	DZUBA	MENKLINAN					BATEN KAITOS					MIZAR	SARGAS	MUHLIFAIN	ALUDRA	GACRUX	ACRAB
	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
ATRIA	51: 131.7	110.3	132.0	47.0	49.0	26.7	20.5	154.3	32.0	30.9	149.0	46.4	129.4	26.8	35.4	30.4	36.9	77.6	25.8	49.7
HANAL	52: 74.7	55.1	99.1	154.0	114.3	155.1	149.6	51.4	160.4	132.2	21.7	119.7	161.1	132.6	149.4	156.1	144.4	92.6	142.1	152.3
MENKENT	53: 110.2	120.0	93.6	28.1	55.9	12.8	17.7	136.0	8.0	42.1	167.2	50.6	91.8	40.4	20.0	11.1	25.5	80.8	26.1	30.5
DIPHOA	54: 111.6	72.9	142.0	117.1	91.4	109.4	107.5	95.1	114.5	90.0	67.8	95.4	142.3	89.3	113.1	112.8	110.9	89.7	104.9	117.7
ALPHAND	55: 44.2	59.2	77.4	94.1	46.8	75.9	67.2	71.1	74.6	109.4	99.3	46.4	80.3	106.6	57.1	68.1	53.5	35.5	60.0	95.8
AL SUHAIL	56: 73.9	64.5	110.2	83.5	11.9	55.8	44.4	97.8	57.5	85.4	116.8	11.6	112.3	81.6	36.6	48.8	31.0	25.1	34.3	80.4
ACAMAK	57: 95.4	53.1	154.4	115.4	56.4	92.2	84.7	94.4	97.4	92.3	81.3	61.0	158.6	89.3	85.8	92.3	81.7	54.4	77.8	117.9
DALIS ALGLID	58: 149.5	115.0	126.8	80.9	107.9	88.7	94.5	124.6	91.8	57.6	93.4	108.7	123.4	59.0	104.3	95.8	106.3	123.0	99.2	80.4
SCHERAI	59: 106.5	96.4	92.7	113.8	143.4	133.9	141.8	79.5	135.2	100.4	50.8	147.4	91.7	103.1	151.9	141.6	154.3	132.3	147.1	111.6
EMIF	60: 132.4	116.6	103.3	90.1	133.0	107.8	116.1	105.5	109.3	74.4	76.6	134.7	100.7	77.0	126.3	115.5	129.6	142.0	122.9	80.4
RIGIL KENT	61: 120.8	110.6	118.6	40.7	44.0	13.5	10.9	147.0	18.7	35.5	139.6	39.9	116.7	31.8	20.5	15.0	23.1	73.2	16.0	43.7
BEGRUX	62: 107.1	99.2	115.7	50.0	32.1	20.7	9.5	133.2	24.1	49.2	151.4	27.4	114.0	45.5	10.8	15.9	10.6	60.5	3.4	53.0
ADHARA	63: 58.1	35.4	113.1	112.9	32.0	84.3	74.8	75.1	86.6	109.7	87.9	36.5	116.9	105.6	65.9	77.9	60.3	5.6	62.4	115.8
REGOR	64: 75.6	56.2	119.1	90.5	9.2	61.5	50.0	96.0	64.1	67.0	110.6	13.7	121.7	63.0	43.0	55.4	30.2	20.1	39.6	93.4
AGILAN	65: 42.6	1.4	101.6	146.0	65.8	116.4	106.8	46.4	120.6	139.7	53.9	70.5	106.1	135.0	99.7	111.8	94.1	38.1	96.4	149.4
ALWIPAK	66: 42.3	2.7	101.8	145.3	64.6	117.1	105.6	47.1	119.3	139.0	55.2	65.3	106.1	135.1	98.4	110.0	92.9	36.8	95.2	148.1
EL MAYA	67: 30.5	28.9	77.7	159.8	93.6	143.2	132.3	17.6	143.1	169.1	30.7	97.6	81.7	165.4	123.2	135.5	118.2	64.4	122.4	159.6
MURQIE	68: 50.1	21.6	109.1	126.5	45.6	98.1	86.5	63.1	100.3	122.2	74.2	50.3	113.4	118.2	79.0	91.6	74.0	18.0	76.1	129.4
WROS	69: 68.2	52.6	113.9	95.6	16.2	67.2	55.7	69.4	69.4	94.6	105.1	19.9	116.8	90.7	18.6	60.6	43.0	13.4	45.3	98.5
SALPH	70: 47.2	10.2	107.2	136.3	57.0	109.6	96.1	54.7	112.1	131.3	62.5	61.0	111.6	127.3	91.4	103.3	85.6	25.9	87.7	141.2

TABLE II.- Continued

	AL MAZIN	ALGENIB								DUBHE				SCUTULUM					MARKAB			CAPH	PHACT	SABIK	
	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110					
ALFA 51:	61.2	33.0	29.5	58.5	21.5	40.9	111.7	144.2	29.9	29.5	43.6	43.0	105.6	150.2	149.9	70.5	53.4	43.5	146.7	19.9					
HAZAL 52:	48.2	127.5	157.7	142.0	132.4	140.3	26.1	87.2	139.5	154.5	149.5	118.9	43.6	28.6	41.3	70.5	136.3	154.6	51.2	132.5					
MEANUN 53:	65.3	41.1	12.0	42.0	35.0	32.3	147.0	104.9	26.0	17.8	30.0	50.0	134.5	157.5	150.3	93.0	45.0	26.0	134.1	50.9					
DIPTHA 54:	67.4	94.4	111.5	115.7	92.9	107.5	34.0	132.9	103.0	100.7	111.5	92.1	41.2	73.5	77.5	67.0	106.2	115.2	92.4	67.3					
ALPHAB 55:	37.4	57.3	76.6	105.2	67.7	100.0	139.0	72.9	59.3	85.7	96.1	50.7	155.4	89.8	121.0	50.0	111.6	93.1	60.8	102.3					
AL SUHAL 56:	29.6	24.9	60.5	98.3	36.8	85.1	131.0	107.7	32.3	67.2	84.8	15.9	142.4	108.8	148.5	41.0	99.8	60.8	91.3	75.5					
ACABAR 57:	52.9	64.0	96.0	124.2	67.5	107.0	07.4	139.3	75.3	98.1	111.3	58.4	77.5	81.5	105.4	32.5	116.1	112.1	80.0	42.7					
DELES ALGLID 58:	122.6	98.8	87.6	75.2	89.6	71.9	47.8	132.4	99.2	81.6	75.6	104.4	36.7	102.3	86.7	102.7	66.2	80.4	125.9	60.9					
SCHERAT 59:	128.2	143.5	131.0	100.8	136.7	108.5	20.6	90.2	146.9	124.1	110.5	143.8	12.9	60.4	33.0	112.2	95.9	115.4	83.4	106.9					
ENIF 60:	139.7	124.5	105.0	79.0	114.6	83.5	36.7	106.7	123.4	98.2	86.1	130.3	20.4	86.3	56.3	119.3	72.4	91.1	109.5	81.0					
RIGIL KENT 61:	77.4	26.5	17.9	54.7	15.1	38.0	127.3	129.3	16.1	21.4	39.3	37.7	120.5	156.0	161.4	78.2	52.6	37.2	141.0	26.2					
BEKRU 62:	64.9	15.2	25.8	64.8	9.5	49.4	135.0	123.1	4.3	31.7	49.9	26.0	131.7	144.7	175.1	68.6	64.3	46.8	127.3	40.0					
ADHARA 63:	3.4	49.6	89.3	127.8	61.2	113.4	107.0	103.2	60.0	95.6	113.6	38.4	122.0	80.7	120.8	17.6	128.2	110.0	67.6	98.8					
REGOR 64:	24.2	26.8	66.6	105.4	38.0	90.5	120.7	114.5	37.2	72.7	90.8	15.5	131.7	103.7	143.7	31.0	105.3	87.5	89.4	77.0					
ADILAM 65:	33.5	83.2	123.3	161.2	94.2	147.2	81.4	87.2	94.0	129.5	147.6	72.0	97.9	46.9	60.8	32.9	161.9	144.0	38.6	120.9					
ALALYAK 66:	32.3	62.0	122.1	159.8	93.2	141.1	62.7	67.4	92.0	126.3	146.4	70.6	95.2	40.1	80.0	32.1	160.8	142.7	39.4	126.1					
LL NAIN 67:	60.2	111.1	147.1	158.6	122.9	165.9	72.7	62.4	120.4	154.1	165.2	99.9	87.4	21.4	60.3	62.6	160.6	160.5	11.1	150.7					
BOZGIN 68:	13.5	63.2	103.0	141.4	74.5	127.1	90.8	96.9	73.6	105.5	127.4	51.9	112.6	67.1	107.1	18.8	141.9	123.8	50.4	111.2					
NAOS 69:	17.8	33.5	72.1	110.5	45.5	96.4	120.7	100.1	43.1	78.5	90.5	22.5	133.5	97.6	137.7	29.1	111.2	92.8	62.3	84.1					
SAIPH 70:	25.4	74.3	114.7	153.2	85.3	136.3	66.5	93.4	85.3	120.7	138.9	63.1	102.5	55.8	95.6	24.5	153.0	135.5	47.0	120.4					



TABLE II.- Continued

	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130
AFRICA 51:	31.0	140.0	43.5	131.5	111.0	110.1	106.9	79.5	84.0	35.1	21.3	114.0	92.6	157.4	142.1	125.1	147.1	135.4	30.5	42.7
ASCELIA									*****											
BARAL 52:	142.1	51.1	114.8	48.5	109.7	72.3	119.1	80.9	85.9	160.6	133.7	77.5	65.0	37.5	25.1	3.9	61.2	17.4	158.5	163.4
BEARLIT 53:	32.7	129.8	60.5	132.0	77.6	115.1	70.0	90.5	87.8	6.5	33.7	102.8	107.2	155.2	157.4	164.2	130.6	168.5	11.6	5.3
DIENOA 54:	99.2	50.0	77.2	81.9	146.0	84.1	156.7	70.2	87.1	117.7	93.9	102.8	66.3	78.7	67.6	42.5	94.7	54.0	112.3	125.5
ALPHERO 55:	100.8	126.0	128.0	63.8	31.3	145.2	39.2	48.6	37.7	66.2	67.8	34.5	57.7	112.3	89.0	114.7	118.1	122.9	78.9	55.5
AL SORAIL 56:	80.0	160.8	101.3	80.6	65.4	170.9	70.2	35.7	32.3	49.9	37.4	50.6	51.8	138.6	103.9	117.2	152.7	133.8	61.2	47.6
ACAPAR 57:	97.4	122.9	89.9	71.0	118.0	120.6	126.7	41.9	53.3	95.6	68.0	76.5	40.1	102.3	73.3	62.9	125.2	79.9	97.6	99.8
DEWLS ALGLID 58:	67.5	78.9	40.0	121.1	171.3	58.7	158.9	112.1	123.4	99.2	89.8	145.0	108.8	88.0	59.9	71.1	80.7	70.5	87.8	107.0
SCHERAT 59:	109.0	38.6	81.7	87.2	130.9	35.2	131.3	115.1	126.3	143.7	137.2	116.3	194.5	40.1	61.6	39.4	44.6	27.7	130.9	150.0
LAIF 60:	83.1	52.9	55.6	112.0	149.0	35.4	142.4	128.5	139.2	117.7	114.0	141.4	116.7	64.7	66.9	61.0	60.7	53.2	104.9	124.4
RIGIL KLINT 61:	30.7	144.4	52.5	129.7	95.9	122.4	91.2	78.7	80.2	19.9	14.0	106.0	94.1	170.9	146.6	139.2	149.1	151.0	19.0	27.2
BECAUX 62:	43.6	155.3	66.3	116.9	85.0	135.4	82.5	67.6	67.7	19.7	8.4	92.2	83.7	175.2	138.6	139.3	157.3	155.7	26.7	23.6
ADHARA 63:	106.7	139.5	121.1	53.8	68.8	159.5	79.0	8.4	5.2	79.4	62.2	37.9	22.6	111.7	75.0	88.5	133.5	104.3	90.1	77.1
REGOR 64:	83.9	161.9	101.3	76.5	73.3	172.6	79.5	27.2	27.0	57.3	39.5	56.4	43.5	134.6	97.7	107.6	154.9	124.8	67.4	56.3
ANILAM 65:	139.4	106.2	142.7	22.3	72.5	125.8	85.2	30.7	30.9	113.0	95.3	29.2	16.6	77.9	41.0	58.4	101.3	71.9	124.1	109.9
ALATIAK 66:	138.4	107.3	142.7	23.1	71.8	127.1	84.4	29.6	29.6	111.7	94.2	28.4	16.0	79.0	42.2	59.8	102.3	73.3	122.8	108.5
LE WAYH 67:	168.1	77.8	159.0	7.9	66.5	99.9	77.8	60.1	57.4	134.6	123.8	34.9	46.5	50.7	20.1	48.3	72.1	53.8	147.4	128.5
MURALIN 68:	120.1	126.1	131.2	40.6	69.4	146.0	81.1	12.1	11.1	93.0	75.5	30.7	11.9	98.0	61.2	76.2	120.6	91.3	103.8	90.4
WAGO 69:	90.5	154.8	108.7	70.0	67.8	176.4	75.0	23.2	20.6	62.1	46.3	49.0	39.3	120.3	92.2	104.9	147.5	121.3	72.9	60.1
SAIPH 70:	130.5	115.1	136.5	30.9	73.2	134.1	85.0	21.8	22.9	104.8	86.4	30.6	8.5	66.7	43.0	64.9	110.2	79.5	115.4	102.2

TABLE II.- Continued

	COR CAROLI	KURSA	ALMACH	ZUBENELGENUB	SCHEDAR	ALGORAB	IZAR	ELTAMIN	MUFRIID	ANKSA										
	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
APRIA	51: 115.5	46.5	157.3	105.8	118.7	145.9	56.1	50.7	8.1	150.6	65.7	98.7	121.2	34.7	76.9	80.3	92.8	30.1	111.0	50.7
HABAL	52: 116.0	84.1	30.9	52.5	77.3	16.9	167.3	85.1	133.5	36.7	150.1	126.6	89.8	145.0	149.8	96.1	136.0	133.1	69.4	09.8
MENKLINT	53: 76.4	85.0	158.9	120.8	111.5	174.0	22.6	85.9	33.8	155.2	29.2	64.1	101.2	33.2	40.1	80.3	54.8	35.2	116.5	98.1
LIPHA	54: 159.5	38.1	77.0	65.7	92.4	63.1	133.7	41.8	89.0	74.5	145.3	150.6	111.2	101.5	160.6	89.2	165.1	97.9	76.7	24.6
ALPHARO	55: 67.5	122.0	93.8	64.5	137.3	111.2	78.9	133.6	81.2	119.3	45.1	84.6	119.4	101.7	46.8	144.8	71.2	59.0	153.0	114.7
AL SUHAIL	56: 96.7	87.3	115.8	65.0	165.1	127.7	76.0	98.5	51.1	144.5	50.3	104.4	147.3	82.6	63.3	140.5	90.0	23.8	169.6	83.4
ACARAK	57: 156.4	45.5	88.6	45.7	128.9	83.5	123.6	57.4	70.9	101.1	113.5	166.5	147.6	101.1	127.9	120.3	154.2	69.1	113.2	28.4
DENLB ALGEID	58: 133.7	32.9	101.2	107.8	67.2	83.0	98.5	21.3	77.5	81.2	128.3	110.8	84.1	68.1	133.5	49.9	121.1	58.1	52.1	42.9
SCHLAT	59: 108.6	75.1	56.4	93.3	42.6	38.9	126.5	67.5	125.5	33.2	157.0	103.5	60.4	108.0	144.6	56.9	117.8	144.7	29.9	72.9
LNIF	60: 114.3	58.2	82.5	43.6	64.9	105.4	47.3	101.5	57.8	139.2	139.2	98.4	62.0	82.3	135.1	39.0	112.1	123.2	27.5	64.0
RIGIL KENT	61: 101.4	62.1	164.1	108.1	122.5	160.7	44.8	66.0	8.9	164.1	50.0	87.9	119.0	33.8	63.5	91.1	79.8	21.3	120.0	73.3
BEGRUX	62: 98.0	70.4	152.1	97.6	134.4	159.1	49.1	76.5	16.3	176.7	43.3	90.1	127.3	46.3	58.3	104.2	79.3	9.3	133.6	77.9
ADHARA	63: 107.0	88.9	88.4	35.5	161.4	98.3	105.2	102.0	74.4	116.2	76.0	124.7	154.7	109.8	85.6	164.8	110.7	55.1	156.6	76.4
REGUR	64: 106.8	80.0	111.4	57.4	175.2	120.5	85.0	92.1	52.3	139.0	61.1	115.3	158.2	85.9	74.2	144.0	101.0	32.1	165.0	73.9
ANILAM	65: 106.3	98.2	54.8	8.1	127.7	64.5	135.7	109.3	106.3	82.2	102.5	131.5	129.5	142.9	108.3	154.6	123.1	88.8	124.9	80.0
AL-ITAK	66: 105.9	98.4	56.0	8.8	128.9	65.8	134.4	109.7	105.3	83.5	101.2	131.0	130.3	141.9	105.2	155.9	124.3	87.7	126.2	80.3
EL NATH	67: 88.1	117.6	27.7	34.0	99.8	42.7	145.1	124.4	135.8	56.4	111.5	114.2	99.6	170.4	107.2	131.2	110.6	116.3	101.6	98.9
MURIM	68: 107.4	92.9	74.8	22.4	147.9	84.7	117.7	105.7	87.3	102.5	86.6	129.3	146.1	123.3	94.1	168.9	116.7	66.7	144.2	77.4
NAOS	69: 102.9	86.2	105.1	52.7	173.8	115.6	88.5	98.6	59.4	133.3	61.7	114.5	155.3	93.3	73.5	150.9	100.1	38.5	169.6	78.5
SAIPH	70: 109.3	93.8	63.8	10.9	136.5	72.9	129.2	105.8	97.4	96.9	97.2	133.6	136.1	134.0	103.0	160.5	123.0	80.0	132.5	76.4

TABLE 11.- Continued

	151	152	153	154	155	156	157	158
ATRIA 51:	45.9	36.2	141.6	80.0	139.5	52.6	7.7	100.6
NAMAL 52:	85.1	121.6	83.9	99.5	11.5	110.8	136.2	113.7
BLAKLNT 53:	82.0	47.0	109.0	75.7	178.5	66.6	31.7	77.0
DLPDGA 54:	45.6	90.4	121.5	100.6	56.8	77.8	90.5	125.0
ALPHARD 55:	92.6	56.5	97.7	24.7	110.9	135.0	85.3	110.2
AL SOHAIL 56:	59.9	22.3	131.7	22.8	123.0	110.1	56.7	127.2
ACANAR 57:	23.1	58.8	148.3	65.2	76.1	95.3	75.6	157.5
DEMBE ALGEID 58:	63.1	98.8	107.4	132.8	80.5	37.5	74.7	87.3
SCHLAT 59:	96.3	141.1	70.9	140.5	39.8	74.8	122.5	80.0
LNIF 60:	86.7	124.8	82.4	152.8	65.0	48.9	97.6	72.7
RIGIL KENT 61:	57.3	31.6	132.9	72.7	153.7	60.8	9.1	95.7
BEGRUX 62:	58.0	21.1	134.2	59.2	151.9	74.7	22.1	103.1
ADHARA 63:	57.7	44.5	128.2	16.1	93.4	129.9	80.7	150.4
REGOR 64:	50.8	22.0	139.8	23.0	114.9	110.3	58.5	137.7
ANILAM 65:	72.8	77.8	106.2	43.3	60.3	143.1	112.7	147.0
ALAITAK 66:	72.6	76.6	106.7	41.9	61.6	148.3	111.7	147.2
LL MATH 67:	99.4	106.2	77.2	65.6	41.9	155.4	142.2	118.8
MURZIM 68:	62.9	57.9	120.1	25.2	80.0	139.4	93.7	153.3
HAJS 69:	56.1	29.1	133.6	15.7	110.6	117.7	65.5	138.7
SALPH 70:	66.3	68.8	113.9	36.3	68.2	143.3	103.8	153.2

TABLE II.- Continued

	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
POLUX	71: 47.0	42.7	51.4	111.3	116.3	114.3	106.5	34.2	90.9	67.5	22.6	143.1	33.2	39.0	37.0	130.2	105.6	140.4	69.5	130.7
MINZARA	72: 24.4	53.5	9.0	138.7	107.4	73.3	95.9	46.4	117.6	126.3	32.3	144.4	5.6	6.9	69.6	97.3	118.7	103.9	111.6	145.3
ALLOIN	73: 105.0	134.7	110.6	56.5	117.2	173.9	119.2	64.2	67.4	39.8	79.3	90.4	92.0	96.8	54.4	146.0	65.7	153.1	10.5	94.2
DEUBA	74: 123.7	98.5	144.2	71.5	42.9	94.7	53.7	152.0	38.7	49.0	124.4	64.6	140.5	153.9	92.8	90.5	93.1	75.0	77.8	7.6
	75: 44.4	20.7	62.3	153.3	40.5	53.4	28.8	109.9	69.5	101.5	61.5	132.9	71.5	73.6	69.0	91.0	170.6	76.8	121.7	82.2
	76: 96.0	69.3	115.0	100.8	14.1	74.5	24.4	153.7	39.7	66.8	104.4	88.0	122.8	126.2	84.8	86.0	121.5	68.4	97.4	29.7
	77: 84.5	58.5	103.6	112.2	7.6	69.3	13.5	145.1	42.4	73.1	94.3	98.7	111.3	114.6	79.3	89.8	133.0	70.0	102.8	41.3
MAKLINAN	78: 62.5	97.8	54.1	95.8	142.6	115.8	131.9	7.6	113.0	98.2	45.3	120.6	37.6	39.3	62.0	120.9	82.9	137.9	71.0	154.1
	79: 97.8	73.1	117.9	97.7	16.8	79.9	28.1	151.1	34.6	61.5	103.9	87.0	124.0	128.2	81.6	92.5	119.4	73.1	92.1	28.1
	80: 122.4	87.8	132.3	78.8	39.7	70.9	51.0	171.6	63.1	75.7	137.1	56.4	148.2	147.1	115.7	63.7	93.4	47.8	102.4	19.8
BATLA KAITOS	81: 76.5	102.8	57.1	87.2	158.2	100.0	147.6	23.7	142.6	118.6	63.9	98.4	50.0	46.1	93.2	91.3	66.2	110.2	66.0	157.8
	82: 48.6	25.9	67.4	148.1	36.2	56.5	24.4	113.5	64.3	96.6	63.9	130.4	75.7	78.4	67.7	92.9	160.3	77.6	118.1	77.5
HAZAR	83: 109.1	137.8	114.9	52.9	115.6	177.0	118.6	67.8	66.1	37.1	83.5	86.6	96.3	101.1	57.4	143.7	83.4	148.9	6.7	90.5
SARGAS	84: 118.3	83.8	128.5	82.9	36.0	68.0	47.3	175.3	62.8	77.5	133.6	60.1	144.2	143.3	114.3	63.5	97.3	46.5	105.1	21.6
KUHLIFAIN	85: 76.9	55.3	97.7	117.5	16.4	73.2	14.3	135.0	36.9	71.3	84.6	106.0	103.2	107.3	69.6	98.1	140.1	78.5	99.3	49.0
	86: 89.1	64.9	109.2	106.4	13.1	75.4	20.1	146.1	36.7	66.6	96.6	95.7	115.6	119.5	77.8	93.3	124.1	73.5	96.6	36.6
	87: 71.4	50.1	92.0	123.1	18.7	70.5	12.6	130.9	42.6	75.3	80.0	112.9	97.8	101.7	67.9	98.1	145.7	78.9	102.3	54.4
ALOUKA	88: 15.4	25.9	37.0	166.4	69.4	63.9	57.7	80.6	84.8	110.2	34.7	158.6	42.5	45.7	57.2	102.1	157.9	95.2	115.4	110.3
GACKUX	89: 74.1	48.9	93.2	122.5	12.4	64.9	6.0	136.4	47.1	79.4	85.3	108.2	101.1	104.3	75.1	91.0	143.4	71.8	107.6	51.7
ACKAB	90: 126.4	101.5	147.2	68.5	45.9	97.0	56.8	150.0	39.5	47.4	126.1	62.4	150.7	156.4	93.4	91.0	90.2	76.1	75.6	8.6

TABLE II.- Continued

	CASIOR	ALDEBARAN	PEACOCK	MIAPLACIDUS	NUNUKI	KAUS AUSTRAL	ALPHERATZ	NAVI	ALHENA	MIRFAK	DENEbola	ALPHECCA	RASALHAGUE	MERAK	POLARIS	PHOEDA	GIENAH	ZEBENESCH	KOCHAB	AVIOR
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
POLLUX	71:	45.0	150.4	99.0	108.7	161.0	95.1	71.4	15.5	53.3	57.0	96.7	128.6	44.7	01.0	51.5	79.7	114.6	07.4	07.5
MINTAKA	72:	43.3	21.8	113.2	70.3	146.7	82.2	80.1	23.3	57.1	94.2	141.4	107.7	80.1	05.0	93.5	100.3	145.0	102.3	67.8
ALAIJAH	73:	50.0	93.9	144.3	131.8	111.7	114.1	94.4	70.7	09.7	43.2	41.0	00.0	15.5	34.7	8.9	73.9	71.8	21.5	127.4
DEUDAH	74:	132.0	169.6	50.3	72.8	39.8	33.5	127.9	142.5	151.5	71.9	49.7	42.1	100.0	113.3	92.9	52.7	16.8	97.4	82.4
	75:	87.9	88.5	08.5	15.3	95.6	85.9	135.7	76.1	124.1	79.5	110.6	124.0	114.5	144.8	115.2	54.0	87.0	142.1	5.7
	76:	123.7	141.2	50.1	43.8	53.2	43.0	145.2	122.9	172.6	73.0	75.1	71.3	113.5	138.1	107.2	42.2	38.7	121.6	52.8
	77:	115.9	129.7	52.6	33.3	62.7	52.2	150.5	112.3	163.5	72.1	84.0	82.7	114.5	144.2	109.4	39.5	48.2	128.2	41.0
	78:	22.6	33.4	154.5	120.0	158.3	168.4	68.4	29.7	26.4	77.5	101.1	122.2	46.7	44.6	54.6	105.1	130.2	56.7	108.5
	79:	121.3	143.7	54.6	47.8	54.6	44.7	147.7	122.6	168.6	68.4	70.2	68.5	108.3	132.9	101.9	38.6	34.0	116.3	56.1
	80:	156.2	153.2	31.9	64.7	19.9	9.6	112.5	132.1	154.4	153.4	97.9	72.2	126.9	129.5	119.0	72.7	44.0	116.8	76.1
	81:	53.1	30.9	128.6	128.4	131.4	141.2	38.2	51.2	9.3	107.9	112.0	116.6	69.7	48.3	76.6	136.3	148.4	64.9	119.3
	82:	89.9	93.4	67.7	14.7	92.8	82.8	140.6	151.7	79.4	76.2	113.4	119.0	113.2	145.2	113.1	49.9	81.6	140.1	9.2
	83:	62.9	97.8	140.2	132.5	107.4	109.9	94.4	64.2	83.1	72.2	44.3	36.9	64.2	19.9	35.8	13.1	73.9	68.5	21.1
	84:	154.4	150.5	29.8	60.6	23.0	12.5	114.7	150.5	150.3	97.8	75.2	55.6	129.1	133.5	121.2	71.2	45.4	120.5	72.0
	85:	105.7	122.8	61.8	32.1	72.6	62.2	159.1	102.9	153.6	64.6	85.0	83.9	107.4	139.6	103.1	31.8	51.1	125.0	37.6
	86:	116.1	134.9	55.6	39.9	61.1	50.8	152.4	115.1	165.1	60.0	77.3	77.2	109.8	130.0	104.2	36.1	41.7	121.8	47.7
	87:	102.2	117.3	63.2	27.8	76.8	05.4	158.4	98.1	149.3	05.4	89.8	94.5	108.0	141.3	104.5	33.2	50.6	127.8	32.4
	88:	61.2	61.2	93.0	43.3	124.0	114.8	119.0	67.9	95.1	71.5	82.3	143.0	97.3	119.1	101.3	00.9	109.1	124.0	31.8
	89:	104.5	119.3	50.0	24.5	71.5	60.8	151.7	175.1	153.7	72.2	94.3	93.1	114.9	147.7	111.1	39.7	57.4	131.3	31.5
	90:	131.9	172.0	59.9	75.9	39.4	33.9	125.6	127.5	148.0	71.0	47.1	39.1	98.9	110.5	91.1	54.2	15.7	94.7	85.1

TABLE II.- Continued

	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	
POULUX	71:	131.7	74.7	110.2	111.6	44.2	73.9	95.4	149.5	106.5	132.4	120.6	107.1	58.1	75.9	42.0	42.3	30.5	50.1	68.2	47.0
KANTAKA	72:	110.3	55.1	120.0	72.9	59.2	64.5	53.1	115.0	96.4	116.6	110.6	99.2	35.4	58.2	1.4	2.7	26.9	2.0	52.6	10.2
ALLOIR	73:	132.0	99.1	93.6	142.0	77.4	110.2	154.4	126.8	92.7	103.3	118.6	115.7	113.1	119.1	1.0	101.6	77.7	109.1	113.9	107.2
DAUDA	74:	47.0	154.0	28.1	117.1	94.1	83.5	115.4	80.9	113.8	90.1	40.7	50.0	112.9	90.5	146.6	145.3	159.8	126.5	95.6	138.3
	75:	49.0	114.3	55.9	91.4	46.8	11.9	56.4	143.4	133.6	44.0	32.1	32.0	9.2	65.8	64.6	93.6	45.6	16.2	57.0	
	76:	26.7	155.1	12.8	100.0	75.9	55.8	92.2	88.7	133.9	107.6	13.5	20.7	84.3	61.5	118.4	117.1	143.2	98.1	67.2	109.6
	77:	26.5	149.6	17.7	107.5	67.2	44.4	84.7	94.5	141.8	116.1	10.9	9.5	72.8	50.0	106.6	105.6	132.3	86.5	55.7	96.1
MENKLIN	78:	154.3	51.4	136.0	95.1	71.1	97.8	94.4	124.0	79.5	165.5	147.0	133.2	75.1	96.6	46.4	47.1	17.6	83.1	89.4	54.7
	79:	32.0	160.4	8.0	114.5	74.6	57.5	97.4	91.6	135.2	109.3	10.7	24.1	80.6	54.1	126.6	119.3	143.1	100.3	69.4	112.1
	80:	30.9	132.2	42.1	90.0	109.4	85.4	94.3	57.6	100.4	74.4	35.5	49.2	105.7	87.6	139.7	139.0	163.1	122.2	94.6	131.3
BATEL KATIOS	81:	149.0	21.7	167.2	67.8	99.3	116.8	81.3	93.4	50.9	70.0	159.6	151.4	87.9	110.6	53.9	55.2	30.7	74.2	105.1	62.5
	82:	46.4	119.7	50.6	95.4	46.4	11.8	61.0	108.7	147.4	134.7	39.5	27.4	36.5	13.7	70.5	69.3	97.6	50.3	19.9	61.8
NIZAR	83:	129.4	101.1	91.8	142.3	80.3	112.3	158.6	123.4	91.7	100.7	116.7	114.8	116.9	121.7	106.1	100.1	81.7	113.4	116.8	111.6
SARGUS	84:	26.8	132.8	40.4	89.3	106.6	81.6	89.3	59.0	103.1	77.0	31.8	45.5	105.6	83.6	135.6	135.1	165.4	116.2	90.7	127.3
MUHLIFAIN	85:	35.4	149.4	20.0	113.1	57.1	36.0	85.8	104.3	151.9	126.3	20.5	10.8	65.9	43.8	99.7	98.4	123.2	79.6	46.6	91.4
	86:	30.4	150.1	11.1	112.8	68.1	48.8	91.3	95.8	141.6	115.5	15.0	15.9	77.9	55.4	111.8	110.6	135.5	91.6	66.6	103.3
	87:	36.9	144.4	25.5	110.9	53.5	31.0	81.7	106.3	154.3	129.6	23.1	10.6	60.3	38.2	94.1	92.9	118.2	74.0	43.0	85.2
ALUDRA	88:	77.6	92.6	80.8	89.7	35.5	25.1	54.4	123.0	132.3	142.0	73.2	60.5	5.0	20.1	33.1	36.8	64.4	18.0	13.4	29.9
GACRUX	89:	29.8	142.1	26.1	104.9	60.0	34.3	77.8	99.2	147.1	122.9	16.8	3.4	62.4	39.6	96.4	95.2	122.4	76.1	45.3	87.7
ACRAB	90:	49.7	152.3	30.6	117.7	95.8	86.4	117.9	80.4	111.6	106.4	43.7	53.0	115.0	93.4	14.4	140.1	152.0	129.4	98.5	141.2

TABLE II.- Continued

	POLLUX	MINTAKA	ALIOTH	DZUBA	MENKLINAN					BATEN KAITOS					MIZAR	SARGAS	MUHLIFAIN	ALUDRA	GACRUX	ACRAB
	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
POLLUX	71:	42.7	60.1	129.3	83.7	119.5	111.4	27.0	117.2	152.3	57.1	82.6	84.4	150.2	101.3	111.6	97.7	57.6	104.0	12.5
MINTAKA	72:	42.7	101.6	148.0	67.1	119.7	108.1	45.7	121.9	140.6	52.6	71.8	103.9	130.7	101.1	113.2	93.5	39.4	97.7	150.8
ALIOTH	73:	60.1	101.6	87.9	121.7	105.8	109.8	60.5	100.4	113.8	79.0	119.1	4.4	115.5	105.0	104.0	107.1	110.0	113.2	65.8
DZUBA	74:	129.3	148.0	87.9	81.9	29.3	40.7	147.0	20.4	27.2	150.6	76.9	84.4	20.6	47.0	35.1	52.6	100.6	51.0	5.1
	75:	83.7	67.1	121.7	61.9	52.7	41.3	105.6	55.6	78.5	119.4	5.4	123.6	74.5	35.9	40.9	30.4	29.3	30.9	84.9
	76:	119.5	119.7	105.6	29.3	52.7	11.6	146.3	5.4	33.4	172.0	47.9	103.6	30.6	20.0	7.9	25.1	80.6	22.0	32.4
	77:	111.4	108.1	109.8	40.7	41.3	11.6	136.3	14.6	42.9	160.6	36.3	108.4	39.7	10.2	6.7	14.3	69.1	10.4	43.7
MENKLINAN	78:	27.0	45.7	60.5	147.0	105.6	138.3	143.5	173.3	31.2	108.8	64.4	175.6	128.1	138.8	124.3	76.7	130.2	145.5	
	79:	117.2	121.9	100.4	26.4	55.6	5.4	143.5	35.2	173.8	50.5	98.3	33.1	20.9	8.7	28.4	82.5	24.7	29.3	
	80:	152.3	140.6	112.8	27.2	78.5	33.4	173.3	35.2	150.6	74.9	108.9	4.1	52.8	41.3	57.1	107.7	51.9	28.4	
BATEN KAITOS	81:	57.1	52.6	79.0	158.6	119.4	172.0	31.2	173.8	150.6	124.3	81.6	152.4	153.1	165.6	147.8	91.8	150.2	155.6	
	82:	85.6	71.8	119.1	76.9	5.4	47.9	36.3	108.8	50.5	74.9	124.3	120.5	71.0	30.6	41.8	25.1	33.3	25.9	79.9
MIZAR	83:	64.4	105.9	4.4	84.4	123.6	103.6	108.4	63.4	98.3	81.6	120.5	111.7	104.3	102.4	106.8	113.6	112.5	82.3	
SARGAS	84:	150.2	136.7	115.5	26.6	74.5	30.8	35.7	175.6	33.1	4.1	152.4	71.0	49.7	38.5	53.8	103.7	48.3	30.2	
MUHLIFAIN	85:	101.3	101.1	105.0	47.0	35.9	20.0	10.2	128.1	20.9	52.8	153.1	30.6	104.3	49.7	12.4	5.6	61.0	8.3	49.5
	86:	111.8	113.2	104.0	35.1	40.9	7.9	6.7	136.8	8.7	41.3	105.6	41.8	102.4	36.5	12.4	17.8	73.8	16.1	36.1
	87:	97.7	95.5	107.1	52.0	30.4	25.1	14.3	124.3	20.4	57.1	147.0	25.1	100.6	53.8	5.6	17.8	56.1	7.2	55.5
ALUDRA	88:	57.6	39.4	110.0	108.6	29.3	80.6	69.1	76.7	82.5	107.7	91.8	33.3	113.0	103.7	73.8	56.1	58.7	111.4	
GACRUX	89:	104.0	97.7	113.2	51.0	30.9	22.0	10.4	130.2	24.7	51.9	150.2	25.9	112.5	46.3	16.1	7.2	58.7	54.0	
ACRAB	90:	129.5	150.8	85.8	3.1	84.9	32.4	43.7	145.5	29.3	20.4	155.6	79.9	82.3	30.2	30.1	55.5	111.4	54.0	

TABLE II.- Continued

	AL WAZN	91	92	93	94	95	96	AL GENIB	DUBHE	98	99	100	101	SCUTULUM	102	103	MARKAB	104	CAPH	105	PHACT	106	107	108	109	110
FOLIOX	71:	55.1	93.7	121.6	132.6	110.3	138.5	102.1	46.8	103.1	128.0	134.7	89.3	115.2	47.8	77.4	68.9	142.2	130.0	24.0	146.5					
AL GENIB	72:	34.9	84.5	124.7	162.6	95.5	148.5	80.1	86.9	95.3	130.8	149.0	73.3	96.7	45.7	85.5	33.8	163.1	145.3	38.1	129.8					
AL GENIB	73:	109.7	122.9	102.5	80.9	125.1	96.4	108.3	15.2	115.0	102.9	92.6	123.0	105.2	76.4	64.5	127.7	89.4	91.0	66.6	120.5					
DUBHE	74:	113.1	65.1	24.2	14.9	55.4	9.0	126.1	102.7	53.5	19.3	5.0	76.0	110.4	162.6	125.6	118.6	17.9	3.5	150.5	37.6					
	75:	33.4	17.6	57.8	96.8	29.4	01.5	123.8	119.6	28.4	63.7	32.0	6.3	132.1	112.7	152.5	38.0	96.3	78.8	98.5	6.9					
	76:	85.0	35.6	5.2	44.1	26.6	29.5	135.5	117.5	24.8	11.4	29.3	46.7	125.1	184.5	154.8	89.3	44.0	26.1	142.7	27.8					
	77:	73.5	24.6	16.0	55.5	17.5	40.0	136.1	119.3	12.9	22.6	46.9	35.3	131.2	153.2	166.3	78.3	55.6	37.5	133.4	35.1					
MARKAB	78:	73.1	122.5	147.6	141.3	134.5	158.4	76.9	45.3	129.0	153.6	152.3	111.8	88.0	22.8	51.6	79.2	149.0	149.4	7.7	173.2					
	79:	67.0	39.3	4.3	41.3	31.0	48.1	139.5	112.3	27.3	11.2	27.5	49.6	127.6	164.4	151.8	92.9	42.4	23.4	141.0	31.1					
	80:	11.6	61.2	30.9	32.0	49.2	17.5	105.4	128.1	53.4	24.3	21.7	72.2	92.4	159.9	125.9	106.9	24.3	25.2	176.2	11.0					
MARKAB	81:	87.3	136.2	177.2	143.8	145.6	158.6	45.7	66.1	147.7	174.5	158.4	125.3	58.2	9.5	33.1	82.7	143.5	161.8	33.2	153.6					
	82:	37.5	13.7	52.9	91.8	25.8	76.8	128.4	118.5	23.5	59.0	77.2	4.3	135.5	117.3	157.3	43.3	91.7	73.8	101.9	64.6					
AL GENIB	83:	113.5	123.3	100.1	77.0	124.4	92.6	108.3	19.3	114.5	100.1	83.0	124.4	103.9	79.5	64.9	131.9	85.3	87.6	70.7	116.9					
SARGAS	84:	107.5	57.3	28.7	35.0	45.2	19.3	106.8	130.6	49.6	22.6	23.3	68.2	94.5	161.2	129.6	102.9	27.9	26.2	172.8	6.9					
MARKAB	85:	66.2	22.1	24.3	61.9	20.2	48.6	145.7	112.4	10.5	31.2	48.2	30.8	140.9	144.5	168.8	73.9	63.3	44.3	123.4	45.3					
	86:	78.3	30.9	11.8	50.0	23.9	30.4	141.5	114.3	18.8	18.8	35.9	41.2	132.4	156.9	160.4	84.4	50.9	32.2	134.9	35.1					
	87:	60.6	17.7	29.6	67.5	18.7	54.2	144.4	113.2	8.1	36.4	53.7	25.5	142.2	139.4	171.6	68.4	68.6	49.8	119.2	49.0					
AL GENIB	88:	4.5	46.8	55.4	123.4	58.6	109.8	112.6	101.2	50.5	91.5	105.7	35.6	127.5	84.2	124.3	22.7	124.6	105.9	69.4	97.0					
SARGAS	89:	63.1	14.9	27.0	65.9	12.0	51.1	137.9	126.1	2.7	33.2	51.3	25.1	135.0	142.9	176.5	68.3	65.9	47.9	124.5	43.0					
AL GENIB	90:	115.9	88.2	27.2	12.0	58.5	10.5	124.7	100.7	50.5	22.3	8.0	79.0	106.7	159.7	122.6	121.0	18.0	8.5	149.7	34.6					



TABLE 11.- Continued

	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130
POLLUX	71: 142.7	67.5	170.5	49.7	36.1	111.2	47.6	61.5	52.9	109.2	110.0	20.2	50.0	60.2	49.0	70.4	75.7	80.6	121.5	101.0
MINORCA	72: 140.6	104.9	142.9	21.5	73.2	127.4	65.9	31.9	32.3	114.4	90.5	49.9	17.5	76.5	39.0	57.1	100.1	70.5	125.4	111.5
ALICIA	73: 106.7	54.3	115.5	82.6	46.1	60.0	40.0	119.1	108.3	119.1	124.1	78.5	116.0	63.6	84.2	102.2	48.3	68.4	101.6	92.5
LAURA	74: 19.0	105.3	41.2	157.4	83.2	87.5	82.0	117.5	115.8	33.5	54.2	126.4	133.7	133.8	170.6	150.8	168.7	140.9	23.3	37.1
	75: 74.7	171.0	92.6	85.7	77.3	165.1	81.7	35.6	36.2	49.3	30.3	65.1	51.8	143.6	106.5	114.0	163.4	131.6	58.7	49.1
	76: 25.4	134.7	52.2	136.1	89.2	115.5	82.4	88.3	87.8	10.5	25.3	108.7	104.4	163.1	159.3	151.7	137.7	159.2	6.1	18.4
	77: 36.0	145.9	61.1	124.9	85.0	127.1	80.4	76.9	76.3	11.1	16.0	98.5	93.0	173.0	147.7	147.2	146.0	161.4	17.4	17.1
MLERLINAN	78: 165.6	65.4	160.5	24.2	58.7	89.0	67.8	75.2	70.3	135.9	135.2	41.3	63.1	42.1	27.6	55.3	56.5	54.2	147.6	126.2
	79: 26.2	131.3	54.0	136.6	85.5	113.6	78.0	91.2	69.7	8.5	25.7	106.2	107.4	159.0	161.3	157.0	133.6	162.1	4.4	15.4
	80: 9.9	110.4	18.8	162.1	118.1	67.3	108.1	110.3	114.4	43.4	46.4	141.3	123.1	135.6	156.9	128.3	116.8	127.0	30.9	50.6
LATEW KATOS	81: 159.9	53.3	131.9	37.2	89.6	72.0	96.0	83.8	84.6	165.3	140.9	65.6	67.7	24.9	12.9	25.5	50.2	44.7	170.8	11.7
	82: 70.0	172.4	90.0	89.8	75.9	162.2	79.2	40.7	40.4	44.0	26.5	67.7	57.0	146.2	111.4	119.4	164.4	137.0	53.7	43.8
MIZAR	83: 103.0	53.2	111.2	86.8	49.2	65.3	42.2	123.1	112.2	97.0	123.2	82.8	120.4	64.8	67.4	104.0	47.7	69.4	95.1	51.6
SARGAS	84: 9.9	114.4	21.5	158.1	117.3	91.2	108.0	106.3	110.3	41.0	44.5	137.6	119.2	139.2	156.8	128.9	120.9	129.1	28.9	48.5
MUHLIFAIN	85: 45.3	149.4	71.1	116.1	75.7	134.5	72.2	71.0	66.8	13.5	19.2	65.9	47.4	167.1	140.4	148.3	149.0	165.7	24.8	14.2
	86: 33.2	139.7	60.0	128.5	82.7	122.3	76.9	82.5	81.0	4.9	22.6	103.9	98.7	166.3	152.7	153.5	141.5	165.5	12.4	12.4
	87: 50.2	154.5	75.1	111.0	74.5	140.1	72.2	65.4	63.3	19.1	18.0	84.3	81.7	165.6	134.9	143.5	153.1	161.3	30.2	19.0
ALUDRA	88: 103.8	141.9	120.6	56.6	64.9	163.8	74.5	13.9	7.2	75.0	59.5	37.6	27.9	114.9	78.9	93.8	135.2	109.2	66.1	72.3
GACROX	89: 45.8	155.8	69.3	114.8	81.7	137.4	79.3	66.5	65.9	19.2	11.1	89.5	82.7	172.3	137.3	140.6	156.7	157.2	27.8	22.0
ALUAB	90: 20.8	102.2	41.2	158.4	53.4	84.9	61.9	120.5	116.6	36.4	57.3	129.9	150.7	130.7	167.7	149.4	105.6	118.4	26.3	39.6

TABLE II. - Continued

	COR CAROLI				KURSA				ALMACH				ZUBENELGENUB				SCHEDAR				ALGORAB				IZAR				ELTAMIN				MUFRIID				ANKKA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															</

TABLE II.- Continued

	151	152	153	154	155	156	157	158
POLLUX 71:	112.9	96.0	70.4	52.6	69.8	169.3	129.2	106.0
MINTAKA 72:	73.2	79.0	105.5	44.6	56.9	148.8	113.8	146.5
ALDIB 73:	169.9	126.1	22.0	100.4	87.6	109.5	127.1	86.0
EZULA 74:	92.3	71.0	94.7	103.8	152.9	43.8	46.8	55.1
75:	****	48.5	12.9	143.5	31.2	122.7	101.6	48.5
76:	70.7	41.6	119.4	77.8	166.2	59.2	19.0	83.4
77:	64.9	30.6	126.0	66.7	160.8	68.6	20.0	93.7
78:	117.0	128.5	59.9	75.2	44.2	152.0	154.5	101.4
79:	76.0	45.2	114.3	78.8	171.2	60.4	24.2	79.2
80:	69.7	65.0	113.6	108.2	137.9	26.0	29.2	72.0
81:	103.5	130.4	67.2	95.2	13.0	125.7	156.5	104.3
82:	51.4	10.5	141.0	33.7	128.0	96.9	45.9	126.5
83:	171.9	126.9	20.9	103.8	89.6	105.1	121.9	41.6
84:	66.5	61.6	117.3	104.3	139.5	29.2	25.2	75.7
85:	68.4	27.8	124.0	58.0	158.6	78.7	29.6	96.6
86:	71.1	36.9	120.1	70.4	167.4	67.1	23.0	87.2
87:	65.6	23.1	127.1	52.7	153.1	83.0	32.0	101.9
88:	60.5	42.1	126.7	10.9	98.0	129.6	78.5	145.0
89:	60.1	20.9	132.3	56.8	152.4	77.5	25.3	103.1
90:	94.6	74.0	92.0	106.4	150.3	43.1	43.7	52.1

TABLE II.- Continued

	SIRIUS	CANOPUS	RISEL	VEGA	HADAR	ACHERNAR	ACRUX	CAPELLA	SPICA	ARCTURUS	PROCYON	ALTAIR	BETELGEUSE	BELLATRIX	REGULUS	FORMALHAUT	DENEK	AL NAIR	ALKAID	ANTARES
91:	11.1	27.6	32.6	166.0	73.7	64.2	62.0	76.7	88.8	113.0	32.5	159.8	36.2	41.2	58.2	101.6	153.5	96.2	115.9	114.8
92:	62.0	34.0	79.2	136.5	23.0	53.9	11.5	127.2	66.2	93.0	77.5	116.6	69.1	91.2	76.6	85.9	154.6	66.4	119.2	81.9
93:	100.8	74.5	120.1	95.7	19.1	78.2	29.5	155.4	37.8	63.1	108.0	84.0	127.4	131.1	85.8	88.7	116.6	69.5	93.7	24.9
94:	138.2	112.7	159.1	56.7	57.3	102.9	68.4	143.6	47.1	45.6	134.6	51.9	160.5	167.4	99.1	89.2	78.2	77.4	70.5	16.0
95:	73.7	43.0	89.5	125.8	12.6	53.2	6.1	139.2	58.5	90.1	89.4	104.8	100.7	102.3	85.2	79.6	144.5	60.7	119.2	54.2
96:	125.3	95.7	142.4	72.7	41.0	86.7	52.6	160.5	47.7	58.3	130.9	59.9	152.0	155.2	101.6	80.7	92.2	65.3	66.1	2.3
ALCEWIB	97:	101.8	103.6	78.2	76.0	130.6	74.5	132.0	69.4	162.0	134.3	105.2	64.3	83.7	76.6	138.9	48.4	53.5	88.2	112.2
DUBHE	98:	93.4	127.0	95.9	66.1	126.9	160.3	125.8	49.3	78.0	53.9	67.9	100.1	77.4	81.9	50.8	147.9	69.2	163.2	25.7
	99:	71.9	46.2	90.7	125.0	13.8	62.9	4.6	134.9	49.4	81.8	83.8	109.8	98.9	101.9	75.3	90.2	145.6	71.1	109.7
	100:	107.3	79.3	125.6	90.0	23.8	78.6	35.0	161.1	41.4	63.1	115.0	77.0	134.1	137.4	91.7	84.6	110.2	66.0	93.5
	101:	125.1	97.3	143.8	71.8	42.0	90.3	53.3	156.8	43.9	54.2	128.5	61.5	151.2	155.4	98.0	84.9	92.3	69.5	82.3
SCUTULUM	102:	50.7	24.6	68.2	147.5	34.2	52.6	22.6	116.2	66.3	98.9	67.4	127.0	77.8	80.0	72.0	88.7	165.0	73.2	121.7
	103:	117.9	114.0	94.5	62.7	124.5	79.1	130.0	81.2	145.6	121.8	125.2	47.8	100.1	93.2	149.5	44.9	42.5	63.4	106.1
	104:	68.8	98.0	51.4	93.2	153.1	101.6	141.5	15.6	135.7	116.2	60.5	107.4	41.8	38.9	84.3	98.4	73.7	116.5	86.2
CAPH	105:	108.9	134.7	90.2	54.1	165.6	117.7	175.5	45.7	129.9	97.5	96.7	69.5	81.9	78.9	104.8	50.0	33.6	109.0	69.7
PHACT	106:	22.7	20.2	26.5	167.6	75.8	46.2	65.0	80.2	104.6	132.0	48.4	140.6	41.6	40.6	78.6	81.0	143.8	79.1	135.3
SABIK	107:	140.0	109.8	156.1	58.1	55.8	94.8	67.4	149.7	54.8	55.4	142.0	40.7	166.2	170.0	107.9	79.6	77.5	60.0	78.9
	108:	121.1	95.1	141.1	74.7	39.5	91.5	50.5	154.8	39.2	51.8	123.5	60.3	146.6	151.5	93.1	86.9	95.9	72.7	80.9
	109:	55.0	90.1	46.6	103.5	136.8	109.3	125.6	11.9	113.7	102.8	76.2	127.1	29.6	31.9	60.7	119.0	89.8	134.1	77.1
	110:	111.5	76.8	121.8	89.8	30.6	62.6	41.3	175.4	63.4	81.5	127.9	66.1	137.3	136.5	112.5	62.5	103.7	44.3	110.2

TABLE II. - Continued

	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
ALGERIA	58.6	56.7	95.3	47.0	127.2	118.3	114.8	114.2	43.4	91.0	79.5	132.6	154.1	96.3	116.1	100.9	70.8	113.4	122.2	55.5
	91:								****											
	103.1	105.6	56.1	10.2	79.2	69.1	142.2	164.4	93.2	141.5	80.0	107.0	106.9	120.6	154.8	118.5	49.4	72.3	144.3	77.0
	93:	125.7	146.3	51.0	48.9	50.4	143.4	154.7	126.6	171.9	72.2	70.3	66.2	111.2	133.9	104.6	42.8	34.0	117.3	57.5
	94:	133.9	174.0	63.5	87.1	36.2	115.0	115.8	150.2	137.5	75.7	40.2	27.2	95.4	101.2	87.5	63.5	19.8	86.4	55.6
	95:	114.7	116.0	46.2	17.4	67.1	139.7	171.3	105.3	152.3	84.1	101.1	96.3	126.7	159.8	123.1	51.7	65.1	144.9	27.7
	96:	141.4	168.3	49.0	70.4	30.9	122.2	131.4	149.6	154.4	81.4	56.9	43.2	109.8	118.8	101.9	60.2	26.4	103.8	80.7
ALGERIA	56.4	62.9	86.0	118.8	87.6	96.3	14.0	46.4	91.4	51.8	149.7	115.6	95.7	106.9	74.2	111.0	177.6	134.8	87.2	119.2
	97:		****		****				****										****	
DOZHL	44.7	78.7	159.5	132.9	126.1	129.2	88.2	55.6	64.6	57.0	47.9	56.2	82.6	5.4	28.7	10.4	80.6	86.2	23.3	125.2
	98:						****													
	107.6	116.8	55.8	21.9	72.7	62.2	150.3	174.4	101.1	151.7	73.5	94.9	95.6	116.1	149.4	112.5	41.2	60.1	135.4	28.9
	100:	132.0	152.1	47.6	53.7	33.7	136.7	149.1	133.7	171.1	76.3	67.9	60.4	113.2	131.9	106.1	48.6	32.0	115.6	63.4
	101:	137.5	170.3	53.1	71.7	34.5	124.4	130.8	146.9	153.4	77.4	53.5	42.2	105.8	116.2	97.9	57.1	22.2	100.9	81.6
SCOTLAND	93.6	94.5	63.5	10.5	89.6	79.7	138.2	153.3	82.3	130.3	80.0	114.9	118.0	117.5	149.4	117.3	52.7	81.9	144.2	6.9
	102:				****															
MARKAB	111.1	79.0	79.2	122.8	73.4	83.0	20.2	49.8	106.9	62.3	148.3	102.3	79.6	108.4	74.3	110.3	162.8	118.3	83.9	126.7
	103:					****													****	
	104:	43.9	24.9	134.6	123.5	140.9	150.5	47.7	34.5	41.9	11.5	100.6	113.1	122.8	65.3	49.3	72.6	127.4	148.1	65.3
CHPH	72.8	64.0	124.1	158.9	106.8	117.2	30.1	6.1	79.6	29.1	106.2	84.3	83.6	63.7	30.2	67.1	138.4	119.0	44.0	152.0
	105:											****	****	****						
PHACT	71.3	52.8	82.6	45.8	117.0	110.6	100.5	110.8	52.3	89.1	106.0	152.2	158.5	113.0	123.6	118.6	67.4	124.9	134.9	36.7
	106:									****							****			
SABIK	143.5	171.7	55.0	84.8	26.6	25.0	110.0	116.6	159.0	139.7	84.9	48.4	28.9	104.2	106.3	96.4	70.1	28.4	94.6	95.3
	107:				****						****								****	
	108:	132.5	167.1	55.7	69.4	39.4	129.4	133.8	141.5	155.3	73.1	53.1	45.2	103.4	116.6	95.7	54.1	19.4	100.9	78.8
	109:	20.2	27.8	149.0	112.6	164.0	174.3	71.3	51.4	30.4	79.2	107.6	129.9	52.1	52.4	60.0	103.0	134.0	64.3	101.1
	110:	151.0	144.8	26.4	53.8	18.2	117.5	141.4	144.0	159.6	98.4	80.9	62.4	133.1	140.4	125.4	69.7	49.2	127.0	65.3

TABLE II.- Continued

	ATRIA	HAMAL	MENKENT	DIPHDA	ALPHARD	AL SUHAII	ACAMAR	DENEB ALGEID	SCHEAT	ENIF	RIGIL KENT	BECRUX	ADHARA	REGOR	ANILAM	ALNITAK	EL NATH	MURZIM	MAOS	SAIPH
	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
AL WAZN	91: 81.2	88.2	85.3	87.4	37.4	29.5	52.9	122.6	128.2	139.7	77.4	64.9	3.4	24.2	33.5	32.3	60.2	13.5	17.8	25.4
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
	92: 33.0	127.5	41.1	94.4	57.3	24.9	64.0	98.8	143.5	124.5	26.5	15.2	49.6	20.8	83.2	82.0	111.1	63.2	33.5	74.3
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
	93: 29.5	157.7	12.0	111.5	78.8	60.5	96.6	87.6	131.0	105.0	17.9	25.8	89.3	66.6	123.3	122.1	147.1	103.0	72.1	114.7
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
	94: 58.5	142.0	42.6	115.7	105.2	98.3	124.2	75.2	100.6	79.0	54.7	64.8	127.8	105.4	161.2	159.8	158.6	141.4	110.5	153.2
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
	95: 21.5	132.4	35.0	92.9	67.7	36.8	67.5	89.6	136.7	114.6	15.1	9.5	61.2	38.6	94.2	93.2	122.9	74.5	45.5	85.3
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
	96: 40.9	146.3	32.3	107.3	100.6	85.1	107.8	71.9	108.5	83.5	38.0	49.4	113.4	90.5	147.2	146.1	168.9	127.1	96.4	138.3
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
ALGERIA	97: 111.7	28.1	147.0	34.0	139.0	131.6	67.4	47.8	20.6	36.7	127.3	135.0	107.0	120.7	81.4	82.7	72.7	96.8	120.7	86.5
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
DOUHL	98: 144.2	87.2	104.9	132.9	72.9	107.7	139.3	132.4	90.2	106.7	129.3	123.1	103.2	114.5	87.2	87.4	62.4	96.9	106.1	93.4
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
	99: 29.9	139.5	28.8	103.0	59.3	32.3	75.3	99.2	146.9	123.4	18.1	4.3	60.0	37.2	94.0	92.8	120.4	73.8	43.1	85.3
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
	100: 29.5	154.5	17.8	108.7	65.7	67.2	98.1	61.6	124.1	98.2	21.4	31.7	95.6	72.7	129.5	128.3	154.1	109.3	78.5	120.7
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
	101: 43.6	149.5	30.6	111.5	98.1	84.8	111.3	75.6	116.5	86.1	39.3	49.9	113.6	90.8	147.6	146.4	165.2	127.4	96.5	138.9
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
SCUTULUM	102: 43.0	118.9	50.6	92.1	50.7	15.9	58.4	104.4	143.6	136.3	37.7	26.0	38.4	15.5	72.0	70.8	95.9	51.9	22.5	63.1
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
NARRAB	103: 105.6	43.6	134.5	41.2	155.4	142.4	77.5	36.7	12.9	20.4	120.5	131.7	122.0	131.7	97.9	95.2	87.4	112.8	133.5	102.8
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
	104: 150.2	28.6	157.9	73.5	89.8	108.8	81.5	102.3	60.4	86.3	156.0	144.7	80.7	103.7	46.9	48.1	21.4	67.1	97.6	55.8
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
CAPRI	105: 149.9	41.3	150.3	77.5	121.0	148.5	105.4	80.7	33.0	56.3	161.4	175.1	120.8	143.7	86.8	88.0	60.3	167.1	137.7	95.6
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
PHACT	106: 76.5	76.5	93.8	67.0	58.6	41.0	32.5	102.7	112.2	119.3	78.2	68.6	17.6	31.0	32.9	32.1	62.6	18.8	29.1	24.5
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
SABIK	107: 53.4	136.3	45.6	106.2	111.8	99.8	116.1	66.2	95.9	72.4	52.6	64.3	128.2	105.3	161.9	160.8	166.6	141.9	111.2	153.0
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
	108: 43.5	154.6	26.0	115.2	93.1	80.8	112.1	80.4	115.4	91.1	37.2	46.8	116.0	87.5	144.0	142.7	160.5	123.8	92.8	135.5
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
	109: 146.7	51.2	134.1	92.4	66.8	91.3	88.0	125.9	83.4	109.5	141.0	127.3	67.6	69.4	38.6	39.4	11.1	55.4	82.3	47.0
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
	110: 19.9	132.5	36.9	87.3	102.3	75.5	63.7	60.9	106.9	81.0	26.2	40.0	98.6	77.0	128.9	128.1	158.7	111.2	84.1	120.4
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****

TABLE II.- Continued

	POLLUX	MINTAKA	ALIOTH	DZUBA	MENKLINAN					BATEN KAITOS					MIZAR	SARGAS	MUHLIFAIN			ALUDRA	GACRUX	ACRAB
	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90		
AL FAAR	91:	55.1	34.9	109.7	113.1	33.4	65.6	73.5	73.1	87.0	111.6	87.3	37.5	113.5	107.5	66.2	78.3	60.6	4.5	63.1	115.9	
							****			****		****										
	92:	98.7	84.5	122.9	65.1	17.0	35.6	24.0	122.5	39.3	61.2	136.2	13.7	123.3	57.3	22.1	30.9	17.7	40.6	14.9	60.2	
			****																			
	93:	121.0	124.7	102.5	24.2	57.6	3.2	16.0	147.6	4.3	30.9	177.2	52.9	100.1	26.7	24.3	11.8	29.6	65.4	27.0	27.2	
																			****			
	94:	132.6	162.6	60.9	14.9	96.6	44.1	55.5	141.3	41.3	32.0	143.0	91.8	77.0	35.0	61.9	50.0	67.5	123.4	65.9	12.0	
												****										
	95:	110.3	55.5	125.1	55.4	29.4	26.0	17.3	134.5	31.0	49.2	145.0	25.6	124.4	45.2	20.2	23.9	18.7	58.6	12.0	50.5	
	96:	136.5	148.5	96.4	9.8	81.5	29.3	40.8	156.4	26.1	17.5	156.0	76.8	92.8	19.3	40.8	36.4	54.2	109.8	51.1	10.9	
ALGERIA	97:	102.1	80.1	106.3	126.1	123.8	135.5	138.1	76.9	139.3	105.4	45.7	128.4	108.3	100.8	145.7	141.5	144.4	112.6	137.9	124.7	
DOUHE	98:	46.8	86.9	15.2	102.7	119.6	117.5	119.3	45.3	112.3	128.1	66.1	116.5	19.3	130.6	112.4	114.3	113.2	101.2	120.1	100.7	
			****																			
	99:	103.1	95.3	115.0	53.5	28.4	24.4	12.9	129.6	27.3	53.4	147.7	23.5	114.5	49.8	10.5	18.8	8.1	56.5	2.7	56.5	
	100:	128.0	130.8	102.9	19.3	63.7	11.4	22.8	153.6	11.2	24.3	174.9	59.0	100.1	22.6	31.2	18.8	36.4	91.9	33.2	22.3	
																			****			
	101:	134.7	149.0	92.6	5.6	82.0	29.3	40.9	152.3	27.3	21.7	158.4	77.2	89.0	23.3	48.2	35.9	53.7	109.7	51.3	6.8	
			****											****								
SCOTIUM	102:	89.3	73.3	123.0	76.0	6.3	46.7	35.3	111.8	49.8	72.2	125.3	4.3	124.4	66.2	30.8	41.2	25.5	35.6	25.1	79.0	
NARKAB	103:	115.2	96.7	105.2	110.4	132.1	125.1	131.2	88.6	127.6	92.4	58.2	135.5	103.9	94.5	140.9	132.4	142.2	127.5	135.0	108.7	
									****		****											
	104:	47.8	45.7	76.4	162.6	112.7	164.5	153.2	22.8	164.4	159.9	9.5	117.3	79.5	161.2	144.5	156.9	139.4	84.2	142.9	159.7	
																			****			
CAPH	105:	77.4	85.5	64.5	125.6	152.5	154.8	166.3	51.6	151.8	125.9	33.1	157.3	64.9	129.6	166.8	160.4	171.6	124.3	176.5	122.6	
			****																			
PHACI	106:	68.9	33.8	127.7	118.6	38.0	89.3	76.3	79.2	92.9	166.9	82.7	43.3	131.9	162.9	73.9	84.4	66.4	22.7	60.3	121.6	
							****					****										
SABIK	107:	142.2	163.1	69.4	17.9	50.3	44.0	55.6	149.0	42.4	24.3	143.5	91.7	65.3	27.5	63.3	50.9	68.8	124.6	65.9	16.0	
				****								****		****								
	108:	130.0	145.3	91.0	3.5	78.8	26.1	37.5	149.4	23.4	25.2	161.6	73.6	67.6	26.2	44.3	32.2	49.8	105.9	47.9	6.5	
			****											****								
	109:	24.0	38.1	66.6	150.5	96.5	142.7	133.4	7.7	141.0	176.2	33.2	101.5	70.7	172.8	123.4	134.9	115.2	69.4	124.5	149.7	
	110:	146.5	129.8	120.5	32.6	67.9	27.6	35.1	173.2	31.1	11.0	153.6	64.6	110.9	6.9	45.3	35.1	49.0	97.0	43.0	34.6	

TABLE II.- Continued

	AL WAZN	ALGENIB	DUBHE	SCUTULUM	MARKAB	CAPH	PHACT	SABIK												
	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110
ALGENIB	91:	50.9	89.9	127.9	62.7	114.3	106.8	99.9	60.9	96.3	114.2	39.7	124.1	79.8	119.9	20.6	129.0	110.4	65.6	100.8
	92:	50.9		40.9	79.9	12.1	64.0	126.2	12.2	46.5	64.8	11.3	130.7	130.1	166.6	53.6	78.8	61.9	115.6	50.9
	93:	69.9	40.9		39.0	31.7	24.6	135.1	115.0	29.4	7.1	24.3	51.8	123.2	160.5	149.7	94.5	39.2	21.0	145.3
	94:	127.9	79.9	39.0		69.7	17.7	115.7	96.2	68.4	33.5	15.5	90.8	99.3	149.3	110.6	133.0	9.6	18.0	147.5
	95:	62.7	12.1	31.7	69.7		53.1	125.9	131.9	10.7	36.3	54.3	23.0	124.1	140.9	169.6	63.2	67.7	52.0	127.7
ALGENIB	96:	114.3	64.0	24.6	17.7	53.1		116.3	111.5	53.4	17.9	4.2	75.2	103.3	165.8	125.8	115.9	14.8	0.5	160.3
	97:	108.8	128.4	135.1	115.7	125.9	118.3		101.8	136.4	129.4	121.5	16.5	54.5	44.0	91.7	108.8	126.5	78.2	108.2
	98:	99.9	126.2	115.0	96.2	131.9	111.5	101.6		121.3	116.5	107.6	122.6	103.0	62.4	58.4	115.6	104.6	105.6	51.4
	99:	60.9	12.2	29.4	68.4	10.7	53.4	136.4	121.3		35.5	53.7	22.5	134.5	140.7	179.1	65.6	60.2	50.4	123.0
	100:	96.3	46.5	7.1	33.5	36.3	17.9	129.4	116.5	35.5		18.3	57.6	116.7	175.5	143.7	99.5	32.7	15.8	151.9
SCUTULUM	101:	114.2	64.8	24.3	15.5	54.3	4.2	121.5	107.6	53.7	18.3		75.9	106.1	164.8	125.5	117.5	15.1	5.1	156.1
	102:	39.7	11.3	51.8	90.8	23.0	75.2	125.4	122.8	22.5	57.6	75.9		131.7	118.9	158.4	43.3	90.0	72.8	104.8
	103:	124.1	130.7	123.2	99.3	124.1	103.3	16.5	103.0	134.5	116.7	106.1	131.7		67.6	45.5	105.6	92.8	111.2	91.4
	104:	79.8	130.1	168.5	149.3	140.9	165.8	54.5	62.4	140.7	175.5	164.8	118.9	67.6		40.1	77.7	151.0	166.1	23.9
	105:	119.9	168.6	149.7	110.8	169.6	125.8	44.0	58.4	179.1	143.7	125.5	158.4	45.5	40.1		115.2	111.0	128.7	57.6
MARKAB	106:	20.6	53.6	94.5	133.0	63.2	115.9	91.7	115.6	99.5	117.5	43.3	105.6	77.7	115.2		129.7	115.2	71.4	96.0
	107:	129.0	78.8	39.2	9.6	67.7	14.8	108.8	104.6	68.2	32.7	15.1	90.0	92.8	151.0	111.0	129.7		19.6	155.9
	108:	110.4	61.9	21.0	18.0	52.0	8.5	126.5	105.6	50.4	15.8	5.1	72.6	111.2	166.1	128.7	115.2	19.6	152.1	29.7
	109:	65.6	115.6	145.3	147.5	127.7	160.3	76.2	51.4	123.0	151.9	156.1	104.8	91.4	23.9	57.6	71.4	155.9	152.1	166.4
	110:	100.5	50.9	26.9	40.9	36.8	24.1	108.2	135.3	44.2	22.0	27.9	61.7	97.3	160.8	135.2	96.6	34.4	29.7	166.4



TABLE II.- Continued

	ALDERMIN	ASCILLA	ALGEIBA	SADIR	ZOCCA	117	118	119	120	121	122	123	124	125	126	127	128	129	130		
AL WAZN	91:	108.1	137.9	123.7	52.4	65.5	159.3	75.8	11.2	2.8	79.5	63.6	35.0	23.7	110.6	74.4	89.4	131.5	104.8	90.6	76.9
	92:	57.1	170.5	76.4	103.3	84.4	148.5	85.1	52.7	53.8	34.1	12.8	81.3	66.6	161.0	123.6	126.2	170.7	143.6	41.8	36.2
	93:	22.0	129.5	49.7	140.3	89.6	110.7	81.9	93.4	92.6	12.6	30.4	112.3	109.5	157.9	164.3	154.0	132.6	157.8	1.0	19.6
	94:	27.7	90.6	38.9	162.0	97.6	72.7	85.2	132.4	130.5	48.4	68.5	138.0	148.5	119.1	156.5	139.7	94.4	126.9	38.1	51.3
	95:	45.5	159.3	64.4	115.0	92.3	136.4	90.9	63.5	65.5	28.3	1.3	93.4	78.9	169.7	133.7	130.2	164.1	146.2	32.7	33.0
ALGELAB	96:	10.4	106.6	32.0	164.3	102.6	86.3	91.6	116.6	117.0	36.3	52.0	135.1	132.0	134.9	170.3	142.8	111.2	136.1	24.0	41.6
	97:	115.2	56.4	87.2	76.5	135.3	55.8	141.5	99.0	107.2	145.8	126.8	105.4	85.3	46.9	52.7	24.7	60.7	24.0	135.4	153.8
LOBHE	98:	121.6	54.1	130.0	67.5	42.6	72.9	41.3	107.9	98.1	109.5	131.2	66.3	102.3	55.0	69.8	90.7	46.6	79.3	114.1	102.3
	99:	47.8	156.5	70.5	112.8	82.1	139.5	80.3	64.0	63.6	21.9	10.0	88.0	80.2	170.9	134.9	138.0	159.3	155.2	30.3	24.5
	100:	15.1	124.0	43.0	147.3	94.9	104.2	86.3	95.2	99.1	19.6	35.0	119.3	115.0	152.5	170.0	150.6	127.9	151.2	6.8	26.4
	101:	14.0	105.7	35.8	161.9	96.7	86.4	87.6	117.5	116.9	35.2	53.1	132.6	133.2	134.3	171.4	146.1	109.8	138.0	23.6	39.8
SCOTULON	102:	68.4	176.7	86.6	92.1	80.2	159.1	83.3	41.6	42.5	43.9	23.9	71.1	57.7	149.8	112.6	118.3	168.7	136.0	52.7	44.5
	103:	101.8	50.9	73.7	92.0	143.3	43.2	144.2	113.7	122.8	135.4	124.6	121.2	101.1	51.8	67.2	40.7	57.3	34.6	123.3	143.0
CAPH	104:	169.3	59.3	141.3	28.4	81.4	79.7	90.5	77.5	77.0	155.9	142.0	56.2	61.9	30.9	8.2	32.5	55.0	33.2	166.6	149.2
	105:	131.5	20.6	109.0	68.0	97.9	39.7	99.5	116.9	117.1	157.2	170.2	92.6	100.7	9.7	45.9	42.7	19.9	25.5	148.9	154.8
PHACE	106:	107.0	135.9	113.1	55.2	85.7	147.3	96.3	9.5	20.9	87.1	64.4	49.4	16.3	107.6	70.5	76.6	132.6	93.9	95.4	87.0
	107:	22.7	91.9	29.4	171.6	106.8	71.5	94.6	131.2	131.8	50.4	66.6	145.8	146.6	120.1	156.3	133.4	96.8	123.2	38.6	54.7
SADIK	108:	16.4	108.6	40.5	156.9	94.1	90.2	83.3	114.4	113.1	31.0	50.8	127.6	130.5	137.1	174.1	151.1	112.1	142.8	20.1	35.1
	109:	166.6	72.6	165.0	16.8	58.6	95.9	68.9	67.4	62.8	132.6	128.4	35.1	55.4	47.9	26.3	55.1	65.9	56.8	145.3	125.6
	110:	13.8	121.1	26.3	151.2	116.5	97.6	108.3	99.3	103.6	38.5	36.2	135.6	112.3	144.7	154.4	128.5	127.7	131.5	27.3	40.1

TABLE II.- Continued

	COR CAROLI	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
					KURSA		ALMACH	ZUBENELGENUB		SCHEDAR	ALGORAB	IZAR	ELTAMIN					MUFRID			ANKAA
91: AL WAZN	103.6	92.2	87.3	35.8	159.9	96.1	104.4	105.3	76.2	115.5	74.3	121.9	151.5	111.0	83.4	167.5	106.1	56.2	157.6	79.7	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
92:	106.6	68.7	138.0	82.7	148.9	144.3	63.6	77.8	26.3	163.7	51.2	102.8	144.2	60.2	60.5	117.4	90.6	5.9	144.8	71.4	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
93:	86.1	73.7	170.9	123.6	108.6	165.9	27.1	74.0	25.7	174.4	41.2	70.3	102.2	23.4	51.6	80.1	63.3	35.1	110.5	88.0	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
94:	71.0	83.2	141.1	162.6	65.9	133.9	26.4	75.1	59.5	115.5	60.2	46.4	64.4	23.9	59.2	44.1	49.4	74.6	73.9	102.1	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
95:	107.5	62.1	149.0	93.0	137.3	150.9	57.1	69.3	14.3	167.4	52.6	99.0	133.8	48.6	67.7	105.4	86.6	8.7	132.8	66.5	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
96:	84.0	70.9	157.9	145.6	85.0	146.3	27.1	65.5	42.0	130.2	57.5	61.4	81.7	6.8	61.9	55.5	60.8	58.4	85.9	89.1	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
97: ALGENIB	125.6	65.3	53.9	75.7	63.2	36.1	142.1	61.9	119.1	41.7	175.8	124.0	80.7	115.5	164.6	74.1	138.1	131.7	50.1	57.6	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
98: DUBHE	29.1	164.8	57.1	94.0	65.9	69.6	89.7	153.3	138.1	60.2	80.1	50.2	51.5	118.2	65.9	91.2	52.6	124.9	80.3	157.0	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
99:	97.4	72.7	148.0	94.2	138.2	156.5	51.4	79.5	21.9	176.0	42.3	91.3	130.0	50.4	57.5	108.3	79.8	6.4	137.8	78.9	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
100:	87.4	70.7	173.2	129.1	102.8	163.0	26.9	69.5	27.6	148.2	46.7	69.2	97.6	16.3	55.7	73.4	64.0	40.7	103.6	86.3	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
101:	79.9	75.1	156.6	147.3	84.6	147.3	23.1	69.7	44.1	130.1	54.3	57.5	79.9	10.7	58.0	56.2	56.6	59.0	86.6	93.2	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
102: SCUTULUM	107.6	72.4	126.7	71.8	160.2	134.2	72.9	83.1	36.9	153.5	55.2	109.1	151.2	71.5	70.0	128.5	95.8	16.9	154.2	71.2	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
103: LAMKAB	120.5	62.3	65.1	92.1	51.4	46.9	125.7	55.1	113.6	45.2	159.5	111.9	70.1	161.4	152.4	57.8	126.3	131.9	36.4	60.5	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
104:	91.3	111.6	8.2	47.9	80.8	21.5	152.0	113.6	150.9	35.8	129.4	110.8	84.9	168.1	121.2	110.7	114.9	135.8	80.6	95.2	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
105: CAPRI	82.0	107.5	32.7	86.6	40.9	24.4	127.8	100.5	157.8	4.9	137.2	88.0	49.1	126.8	121.9	70.9	99.5	174.4	41.5	161.5	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
106: PHACT	124.1	74.4	85.9	29.9	153.7	91.0	115.6	87.3	74.0	110.3	90.6	142.0	162.3	110.7	102.0	152.0	127.9	19.6	141.7	59.9	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
107: SABIK	80.3	73.9	143.2	159.2	70.2	132.2	33.5	65.5	55.8	115.4	67.0	55.5	68.0	19.1	67.7	41.0	59.0	73.2	71.4	92.8	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
108:	77.3	78.2	138.1	144.6	87.9	151.5	16.8	73.6	43.0	133.5	49.3	56.1	81.6	13.8	53.4	60.5	53.8	56.0	90.8	95.9	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
109:	77.1	128.4	27.1	44.0	94.3	44.7	133.4	134.2	141.7	54.4	105.6	101.1	91.3	165.6	99.2	126.6	99.5	120.0	95.0	109.8	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	
110:	107.0	49.3	162.1	124.8	99.3	143.9	46.6	47.4	24.7	136.0	66.2	85.4	101.5	17.4	77.7	67.0	63.4	46.7	94.2	66.3	
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	

TABLE II.- Continued

	151	152	153	154	155	156	157	158
AL WAZN 91:	61.1	46.1	125.1	13.5	93.5	132.6	82.5	147.6
92:	48.9	6.0	144.0	47.3	137.5	85.3	32.2	118.0
93:	74.6	46.8	115.0	82.3	167.5	56.2	21.9	78.4
94:	101.5	85.6	83.4	118.0	138.5	38.1	53.4	42.2
95:	48.5	16.7	143.5	59.4	143.5	73.3	20.1	110.0
96:	84.8	69.5	100.9	106.8	148.3	35.6	35.8	59.8
ALGEMIA 97:	79.6	124.4	87.5	121.9	32.7	82.8	118.6	100.6
DUBHE 98:	159.6	127.6	25.7	93.0	76.2	123.2	136.5	59.9
99:	58.0	18.2	134.5	54.9	149.7	78.9	26.1	105.8
100:	75.4	52.2	113.0	89.1	162.1	49.3	22.5	74.4
101:	88.2	70.4	98.0	106.0	150.2	38.8	38.1	57.4
SCUTULUM 102:	47.6	6.8	145.0	37.0	127.9	95.6	43.0	127.4
MAKAB 103:	84.1	128.4	83.3	137.5	45.8	68.1	111.3	86.9
104:	104.4	124.6	68.0	86.6	22.0	135.2	156.6	107.7
CAPU 105:	122.6	162.6	44.9	125.7	31.2	100.5	153.4	73.4
PHACT 106:	44.1	47.7	138.1	33.5	84.7	120.9	80.3	167.5
SASIA 107:	93.9	84.2	89.5	121.1	135.3	28.8	49.5	47.8
108:	89.0	67.7	98.2	101.6	154.9	43.8	37.3	58.6
109:	110.1	111.4	67.4	68.5	45.8	157.8	147.8	108.8
110:	60.7	55.0	123.9	98.2	140.7	34.7	16.8	82.2

TABLE II.- Continued

	SIRIUS	CANOPUS	RIGEL	VEGA	HADAR	ACHERNAR	ACRUX	CAPELLA	SPICA	ARCTURUS	PROCYON	ALTAIR	BETELGEUSE	DELLATRIX	REGULUS	FORMALHAUT	DEHEB	AL MAIR	ALKAID	ANTARES
111:	119.1	67.1	133.4	80.5	34.4	76.3	46.2	170.8	53.2	68.0	129.8	62.8	140.2	147.4	105.8	73.3	98.0	56.5	96.4	12.5
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
ALDEBARAN 112:	126.9	155.2	110.3	34.0	147.6	129.8	159.0	61.3	112.7	80.0	109.6	56.0	100.0	98.2	104.6	94.3	18.1	110.0	56.2	105.6
ASCELLA 113:	133.2	97.0	133.9	68.9	56.9	69.7	67.5	153.8	79.6	84.7	153.9	40.4	152.5	147.1	133.5	50.4	78.4	39.4	105.5	33.8
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
114:	41.3	74.5	29.9	118.5	126.0	92.9	114.3	25.2	116.9	116.2	33.5	135.6	14.4	15.1	65.1	108.6	101.5	120.4	93.0	163.5
ALGERIA 115:	64.2	88.6	80.1	101.5	92.0	128.1	86.6	66.2	55.1	55.2	41.7	133.4	65.2	72.6	8.4	167.0	111.1	152.6	50.5	100.7
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
SADIR 116:	148.4	156.4	127.5	20.3	126.3	117.6	138.0	84.3	108.6	78.9	133.5	32.2	121.5	118.1	122.3	78.6	6.1	90.4	65.5	85.8
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
ZOSMA 117:	75.7	96.2	92.8	92.2	87.9	134.9	84.8	75.0	45.2	42.6	54.3	122.0	77.8	85.2	17.9	170.2	105.6	150.4	41.9	89.6
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
118:	14.5	22.6	26.7	170.6	75.6	54.8	64.2	77.4	98.1	124.0	40.0	150.1	38.0	38.7	69.1	91.0	148.5	87.5	126.1	117.6
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
119:	8.3	29.8	30.3	164.1	76.5	65.5	64.8	73.9	90.5	113.7	36.4	161.2	35.4	38.5	57.7	102.4	150.7	97.8	114.5	117.5
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
120:	90.1	68.0	111.2	104.1	18.0	80.3	23.9	143.4	31.6	62.0	95.4	96.2	115.9	120.5	74.3	97.8	126.6	78.0	91.8	36.2
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
121:	74.6	44.3	90.7	124.7	11.3	54.3	5.4	140.0	57.3	88.8	90.0	104.2	101.6	103.4	84.9	80.2	141.6	61.2	118.0	53.1
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
COMELISA 122:	27.1	62.5	36.9	131.5	101.7	95.5	90.7	46.9	91.1	98.6	4.3	161.9	22.8	30.3	39.8	126.4	123.9	128.4	87.0	134.2
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
ARABUS 123:	17.3	36.3	10.6	154.8	91.3	58.4	80.1	63.9	112.4	133.4	36.8	145.3	25.6	24.2	74.2	88.6	132.3	90.6	145.4	133.2
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
RUCHARACH 124:	99.5	127.6	81.8	62.5	175.3	117.5	172.4	36.0	130.9	59.9	87.1	79.2	72.4	69.9	57.6	94.9	43.1	114.5	70.4	134.1
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
125:	63.6	90.7	44.4	99.8	146.2	93.7	135.1	21.3	140.0	123.7	58.8	110.4	37.3	33.2	86.7	93.4	79.1	110.5	94.1	170.6
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
SHERATAN 126:	80.5	93.7	57.0	91.1	140.4	78.1	135.1	48.1	168.0	139.7	84.6	87.8	52.5	52.9	115.5	66.0	67.3	84.7	109.9	144.2
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
ALPHIRK 127:	120.8	152.8	106.3	38.7	151.6	135.2	161.5	55.0	110.5	77.6	102.0	63.6	94.3	93.2	97.2	101.4	25.9	117.7	51.5	110.0
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
MIRACH 128:	94.8	111.4	72.3	74.1	153.8	93.0	151.7	46.7	155.3	123.0	92.9	76.5	70.6	65.1	116.0	72.3	50.5	92.1	94.7	136.7
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
129:	101.5	75.4	120.9	94.8	20.1	79.2	30.5	155.2	37.1	62.1	108.3	83.6	128.0	131.8	85.6	89.3	115.9	70.1	92.8	24.2
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****
130:	86.9	69.1	109.2	104.8	24.6	86.0	27.7	135.8	25.6	57.4	89.4	101.3	111.5	116.8	64.4	105.7	128.3	85.9	86.2	41.1
	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****	****

TABLE II.- Continued

	CATOR	ALDEBARAN	PEACOCK	MIAPLACIDUS	NUNKI	KAUS AUSTRAL	ALPHERATZ	NAVI	ALHENA	MIRFAK	DENEbola	ALPHECCA	RASALHAGUE	MERAK	POLARIS	PHOEDA	GLENAH	ZEBENESCH	KOCHAB	AVIOR
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
111:	146.4	158.2	39.4	62.3	28.5	18.9	121.7	137.5	148.2	160.4	88.1	67.2	51.6	119.6	128.6	111.8	63.0	35.7	114.0	73.2
ALDEBARAN 112:	83.2	83.9	119.8	172.6	93.4	103.1	43.2	25.2	95.0	47.8	97.4	64.7	63.6	59.4	27.3	55.5	125.6	98.5	33.0	172.6
ASCELLA 113:	172.9	143.9	30.5	77.6	3.9	9.3	93.7	115.1	165.4	134.8	113.0	75.3	47.4	131.0	126.1	123.6	51.0	56.3	111.8	89.1
114:	28.2	15.3	133.0	98.5	161.5	103.3	73.5	64.0	15.0	38.5	87.4	123.6	146.3	67.6	66.4	75.4	104.8	144.2	81.0	67.4
ALGELBA 115:	38.8	80.8	137.5	90.3	132.8	126.3	124.5	93.5	52.7	83.5	21.9	71.5	102.6	37.4	70.5	38.3	47.0	78.7	64.9	82.5
SADIR 116:	107.0	102.7	97.0	149.8	69.6	75.4	47.0	45.6	116.3	68.6	107.2	59.8	45.9	77.6	49.8	75.6	125.2	85.8	49.6	160.7
ZOECA 117:	50.0	92.8	132.4	92.6	120.9	115.5	128.7	96.2	65.2	90.6	10.2	55.4	90.4	35.9	70.0	34.0	41.0	60.8	60.9	87.4
118:	64.4	52.9	85.2	46.5	123.0	115.5	106.4	111.7	46.7	88.9	90.7	143.6	159.6	104.9	119.7	110.2	80.4	120.9	128.8	35.9
119:	56.2	54.0	97.6	49.7	129.8	121.1	112.7	111.4	40.7	86.2	79.7	133.1	156.3	94.6	113.6	59.5	72.5	115.6	120.1	38.3
120:	113.4	136.1	59.9	43.6	63.0	52.9	155.6	160.1	114.1	162.1	63.4	73.3	75.4	105.0	133.2	99.3	31.9	38.2	117.1	50.5
121:	115.1	117.1	46.4	18.6	66.5	56.4	140.6	172.5	106.0	153.5	83.3	99.6	95.2	126.0	158.8	122.2	50.8	63.7	143.7	28.8
GOVEISA 122:	23.7	42.5	130.2	80.1	160.5	150.2	102.8	86.5	14.5	65.0	64.3	113.7	145.2	63.6	81.5	69.6	75.8	118.3	87.6	68.7
AKNEB 123:	57.7	37.1	97.2	61.6	131.5	126.4	91.1	95.7	37.8	73.4	98.2	151.4	174.7	100.6	107.3	107.4	94.4	136.8	119.5	51.7
RUCJWACH 124:	63.7	55.4	131.0	153.1	116.3	126.8	33.8	3.6	69.9	19.6	102.7	89.1	92.1	60.0	29.1	64.6	135.5	125.1	44.9	144.1
125:	46.3	16.1	128.1	116.3	140.3	148.7	48.2	40.7	40.1	18.6	105.2	121.2	129.4	72.4	57.4	79.9	128.9	155.9	73.4	106.7
SHERAFAR 126:	75.1	38.3	103.2	116.2	111.8	119.6	25.4	41.2	60.7	34.0	133.1	126.7	110.4	94.7	60.5	101.1	156.5	157.1	84.6	111.3
ALPHIPK 127:	75.5	79.9	127.6	178.4	106.6	110.0	47.0	22.7	86.2	43.5	91.5	64.4	68.0	52.0	19.3	53.1	121.4	99.8	46.9	167.0
HIRACH 128:	70.5	49.4	110.0	133.7	107.7	117.5	14.5	25.2	76.2	26.2	126.3	106.9	101.1	84.1	53.7	89.2	158.3	140.9	66.5	129.1
129:	125.5	147.1	51.7	49.9	50.3	40.4	143.4	153.8	127.0	171.1	71.6	69.3	65.3	110.4	132.6	103.7	42.5	33.0	116.3	56.6
130:	105.9	132.5	67.9	46.2	69.9	60.1	163.1	155.7	108.2	154.2	55.6	70.6	77.4	97.6	127.4	92.3	23.9	38.0	111.9	51.4

TABLE II.- Continued

	ATRIA	HAMAL	MEKKENT	DIPHDA	ALPHARD	AL SUHAIL	ACAMAR	DENEK ALGEID	SCHEAT	ENIF	RIGIL KENT	BEGRUX	ADHARA	REGOR	ANILAM	ALNITAK	EL NATH	MURZIM	NAOS	SAIPH
111:	31.0	142.1	32.7	99.2	100.6	80.0	97.4	67.5	109.0	83.1	30.7	43.6	106.7	83.9	139.4	138.4	168.1	120.1	90.5	130.5
ALGILIN 112:	140.0	61.1	129.8	90.0	126.0	160.8	122.9	78.9	38.6	52.9	144.4	155.3	139.5	161.9	106.2	107.3	77.8	126.1	154.8	115.1
ASCELLA 113:	43.6	114.8	60.8	77.2	128.0	101.3	89.9	40.0	81.7	55.6	52.5	66.3	121.1	101.3	142.7	142.7	159.0	131.2	108.7	136.5
114:	131.5	46.5	132.0	81.9	63.8	80.6	71.8	121.1	67.2	112.0	129.7	116.9	53.8	76.5	22.3	23.1	7.9	40.6	70.0	30.9
ALGLABA 115:	111.0	109.7	77.6	146.0	31.3	65.4	118.0	171.3	130.9	149.0	95.9	85.0	66.8	73.3	72.5	71.8	66.5	69.4	67.8	73.2
SADIR 116:	116.1	72.3	115.1	84.1	145.2	170.9	120.6	59.7	35.2	35.4	122.4	135.4	159.5	172.6	125.8	127.1	99.9	146.0	176.4	134.1
4363A 117:	106.9	119.1	70.0	158.7	39.2	70.2	128.7	158.9	131.3	142.4	91.2	82.5	79.0	79.5	85.2	84.4	77.8	61.1	75.0	85.6
118:	79.5	80.9	90.9	76.2	48.6	35.7	41.9	112.1	119.1	128.5	78.7	67.6	8.4	27.2	30.7	29.6	60.1	12.1	23.2	21.8
119:	84.0	85.9	87.8	87.1	37.7	32.3	53.3	123.4	126.3	139.2	80.2	67.7	5.2	27.0	30.9	29.6	57.4	11.1	20.6	22.9
120:	35.1	160.6	6.9	117.7	66.2	49.9	95.8	99.2	143.7	117.7	19.9	19.7	79.4	57.3	113.0	111.7	134.6	93.0	62.1	104.8
121:	21.3	133.7	33.7	93.9	67.8	37.4	68.6	89.8	137.2	114.6	14.0	8.4	62.2	39.5	95.3	94.2	123.8	75.5	46.3	86.4
SUMELSA 122:	114.0	77.6	102.8	102.8	34.5	56.6	78.5	145.0	116.3	141.4	106.0	92.2	37.9	56.4	29.2	28.4	34.9	30.7	49.0	30.6
ARNUB 123:	92.8	65.0	107.2	68.3	57.7	51.0	40.1	108.8	104.5	118.7	94.1	83.7	22.6	43.5	16.6	16.0	46.5	11.9	39.3	8.9
RUCHBACH 124:	157.4	37.5	155.2	78.7	112.3	138.0	102.3	86.0	40.1	64.7	170.9	175.2	111.7	134.6	77.9	79.0	50.7	98.0	128.3	86.7
125:	142.1	25.1	157.4	67.6	89.0	103.9	73.3	99.5	61.8	86.9	148.6	138.6	75.0	97.7	41.0	42.2	20.1	61.2	92.2	49.6
SUKRATAJ 126:	125.1	3.9	164.2	42.5	114.7	117.2	62.9	71.1	39.4	61.0	139.2	139.3	68.5	107.6	58.4	59.8	48.3	76.2	104.9	64.9
ALPHIREK 127:	147.1	61.2	130.6	94.7	116.1	152.7	125.2	86.7	44.6	66.7	149.1	157.3	133.5	154.9	101.3	104.3	72.1	120.6	147.5	110.2
ELRACH 128:	135.4	17.4	168.5	54.0	122.9	133.6	79.9	70.5	27.7	53.2	121.6	155.7	104.3	124.6	71.9	73.3	53.8	51.3	121.3	79.5
129:	30.5	156.5	11.6	112.3	76.9	61.2	97.6	87.8	130.9	104.9	19.0	26.7	90.1	67.4	124.1	122.8	147.4	103.8	72.9	115.4
130:	42.7	163.4	9.3	124.6	59.5	47.6	99.8	107.0	150.0	124.4	27.2	23.0	77.1	56.3	109.9	106.5	126.5	90.4	60.1	102.2

TABLE II.- Continued

	POLLUX	MINTAKA	ALIOTH	DZUBA	MENKLINAN					BATEIN KAITOS					SARGAS					MUHLIFAIN					ALUDRA	GACRUX	ACRAB
	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90							
111:	142.7	140.6	106.7	15.0	74.7	25.4	36.0	165.6	26.2	9.9	155.9	70.6	103.0	9.9	45.3	53.2	50.2	103.8	45.8	40.6							
ALDEMIN 112:	87.5	104.9	54.3	105.3	171.0	134.7	145.9	65.4	131.3	110.4	53.3	172.4	53.2	114.4	149.4	139.7	154.5	141.9	155.6	102.3							
ASCELLE 113:	170.5	142.9	115.5	41.2	92.6	52.2	61.1	160.5	54.0	18.6	131.9	90.6	111.2	21.5	71.1	60.0	75.1	120.6	69.3	41.2							
114:	29.7	21.5	82.6	157.4	85.7	136.1	124.9	24.2	136.6	162.1	37.2	89.8	66.8	158.1	116.1	128.5	111.0	56.6	114.8	58.4							
ALGLIBA 115:	36.1	73.2	46.1	93.2	77.3	89.2	85.0	58.7	85.5	116.1	89.8	75.9	49.2	117.3	75.7	82.7	74.5	64.9	61.7	53.4							
SADIK 116:	111.2	124.4	68.0	87.5	165.1	115.5	127.1	89.0	113.6	87.3	72.0	162.2	65.3	91.2	134.5	122.3	140.1	163.8	137.4	84.6							
202CA 117:	47.8	85.9	40.0	82.0	81.7	82.4	80.4	67.6	78.0	108.1	98.0	79.2	42.2	108.0	72.2	76.9	72.2	74.5	79.3	81.9							
118:	61.5	31.9	119.1	117.5	35.6	88.3	76.9	75.2	91.2	110.3	83.8	40.7	123.1	106.3	71.0	82.5	65.4	13.9	66.5	120.5							
119:	52.9	32.3	108.3	115.8	36.2	87.8	76.3	79.3	89.7	114.4	84.6	40.4	112.2	110.3	68.8	81.0	63.3	7.2	65.9	118.6							
120:	109.2	114.4	99.1	33.6	49.3	10.5	11.1	135.9	8.5	43.4	165.3	44.0	97.6	41.0	13.5	4.9	19.1	75.0	19.2	36.4							
121:	110.6	96.5	124.1	54.2	30.3	25.3	16.0	135.2	29.7	46.4	140.9	26.5	123.2	44.5	19.2	22.6	18.0	59.5	11.1	57.3							
GOMEISA 122:	20.2	29.9	78.5	128.4	65.1	108.7	98.5	41.3	108.2	141.3	65.6	67.7	82.8	137.8	88.9	100.9	84.3	37.6	69.5	129.9							
ARNEB 123:	56.0	17.5	116.0	133.7	51.8	104.4	93.0	63.1	107.4	123.1	67.7	57.0	120.4	119.2	87.4	98.7	81.7	27.9	82.7	136.7							
RUCHBACH 124:	68.2	76.6	63.6	133.6	143.6	103.1	173.0	42.1	159.0	135.6	24.9	146.2	64.6	139.2	167.1	166.3	165.6	114.5	172.3	130.7							
125:	49.6	39.6	84.2	170.6	106.5	159.3	147.7	27.6	161.3	156.9	12.9	111.4	67.4	156.8	140.4	152.7	134.9	78.9	137.3	167.7							
SHERATA 126:	78.4	57.1	102.2	150.8	114.0	151.7	147.2	55.3	157.0	128.3	25.5	119.4	104.0	128.5	146.3	153.5	143.5	93.8	140.6	149.4							
ALPHIRK 127:	79.7	100.1	48.3	108.7	163.4	137.7	146.0	58.5	133.6	116.8	50.2	164.4	47.7	120.9	149.0	141.5	153.1	135.2	150.7	105.6							
ILIRACH 128:	80.6	76.5	68.4	140.9	131.6	159.2	161.4	54.2	162.1	127.0	23.7	137.0	89.4	129.1	165.7	155.5	161.3	109.2	157.6	138.4							
129:	121.5	125.4	101.6	23.3	58.7	0.1	17.4	147.6	4.4	30.9	178.0	53.7	99.1	28.9	24.8	12.4	30.2	86.1	27.8	26.3							
130:	101.8	111.3	52.6	37.1	49.1	18.4	17.1	128.2	15.4	50.6	158.7	43.8	91.6	46.5	14.2	12.4	19.0	72.3	22.0	39.6							

TABLE II.- Continued

	AL WAZN				ALGENIB				DUBHE				SCUTULUM				MARKAB				CAPH				PHACT				SABIK																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													



TABLE II.- Continued

	ALDERMIN	ASCELLA	ALGEBBA	SADIR	ZOZCA	118	119	120	121	GOMEISA	ARNEB	RUCHBACH	SHERATAN	ALPHIRK	MIRACH					
	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130
111:	113.8	26.1	160.4	108.2	91.9	98.3	108.8	110.9	34.6	44.0	134.1	123.3	141.1	160.7	138.2	119.2	136.2	21.8	41.4	
ALDERMIN 112:	113.8	96.4	65.7	96.7	23.9	93.8	136.8	135.1	136.7	150.4	100.0	120.9	28.5	65.9	62.0	8.0	44.2	128.6	135.4	
ASCELLA 113:	28.1	96.4	159.0	134.5	72.5	123.0	119.2	126.3	62.2	63.9	157.7	127.6	118.4	139.8	111.1	103.8	106.2	49.7	69.4	
114:	160.4	85.7	159.0		65.5	107.6	77.5	52.2	49.5	128.2	115.9	29.4	39.0	58.4	25.4	51.8	79.9	59.6	140.8	122.7
ALGEBBA 115:	108.2	96.7	134.5	65.5		113.9	12.7	76.2	64.9	76.8	91.9	43.3	79.9	91.5	84.9	113.6	89.1	111.5	89.2	70.8
SADIR 116:	91.9	23.9	72.5	107.6	113.9		107.2	153.2	156.6	121.1	135.7	129.6	137.3	49.2	84.9	71.6	31.5	55.3	110.0	123.3
ZOZCA 117:	98.3	93.8	123.0	77.5	12.7	107.2		86.8	75.5	72.5	90.2	56.0	92.0	94.9	95.0	123.0	87.1	117.5	81.3	64.6
118:	108.8	136.8	119.2	52.2	76.2	153.2	86.8		11.4	84.5	64.6	41.6	16.3	108.3	71.0	81.6	132.0	98.1	94.3	83.2
119:	110.9	135.1	126.3	49.5	64.9	156.6	75.5	11.4		82.1	66.4	32.7	21.9	107.8	71.7	87.3	128.6	102.3	93.4	79.3
120:	34.6	136.7	62.2	128.2	78.8	121.1	72.5	84.5	82.1		27.0	99.7	100.8	161.9	153.2	158.3	137.7	169.7	12.8	8.0
121:	44.6	158.4	63.9	115.9	91.9	135.7	90.2	64.6	66.4	27.0		93.9	80.1	171.1	134.9	131.5	162.9	147.3	31.4	31.8
GOMEISA 122:	134.1	106.0	157.7	29.4	43.3	129.0	56.0	41.6	32.7	99.7	93.9		38.5	83.0	54.6	80.7	98.5	86.7	112.6	93.6
ARNEB 123:	123.3	120.9	127.6	39.0	79.9	137.3	92.0	16.3	21.9	100.8	80.1	38.5		92.4	55.0	65.9	116.9	82.0	110.4	99.4
RUCHBACH 124:	141.1	26.5	118.4	58.4	91.5	49.2	94.9	108.3	107.6	161.9	171.1	83.0	92.4		37.4	39.8	25.4	24.8	157.0	156.5
125:	166.7	65.9	139.6	25.4	84.9	84.9	95.0	71.0	71.7	153.2	134.9	54.6	55.0	37.4		28.8	62.2	34.1	165.0	140.1
SHERATAN 126:	138.2	62.0	111.1	51.8	113.6	71.6	123.0	81.6	87.3	156.3	131.5	80.7	65.9	39.8	28.8		62.7	17.8	154.7	162.5
ALPHIRK 127:	119.2	8.0	103.8	79.9	89.1	31.5	87.1	132.0	128.8	137.7	162.9	98.5	116.9	25.4	62.2	62.7		45.3	131.6	134.8
MIRACH 128:	136.2	44.2	108.2	59.6	111.5	55.3	117.5	96.1	102.3	169.7	147.3	88.7	82.0	24.8	34.1	17.8	45.3		157.8	177.5
129:	21.8	128.6	49.7	140.8	89.2	110.0	81.3	94.3	93.4	12.8	31.4	112.6	110.4	157.0	165.0	154.7	131.6	157.8		19.7
130:	41.4	135.4	59.4	122.7	70.8	123.3	64.6	83.2	79.3	8.0	31.8	93.6	99.4	156.5	148.1	162.5	134.6	177.5	19.7	

TABLE II.- Continued

	COR CAROLI	131	132	133	134	135	ALMACH	ZUBENELGENUB	137	138	139	SCHEDAR	ALGORAB	IZAR	ELTAMIN	143	144	145	146	MUFRID	147	148	149	150	ANKAA
111:	93.6	61.9	104.1	136.7	91.9	146.0	34.5	56.0	33.2	135.4	60.8	71.6	90.7	3.8	67.6	60.6	70.1	51.9	90.2	79.5	*****	*****	*****	*****	*****
ALBERMIN 112:	70.1	110.7	51.3	106.6	22.0	45.0	107.4	106.2	145.8	25.6	123.3	69.9	28.7	119.6	106.3	54.1	82.9	164.6	29.1	111.4	*****	*****	*****	*****	*****
ASCELLA 113:	109.2	45.3	138.1	135.5	75.0	126.3	56.9	36.1	50.2	111.7	86.7	83.5	84.7	24.3	53.6	43.7	80.4	72.7	60.4	64.1	*****	*****	*****	*****	*****
114:	91.2	114.5	35.2	27.2	107.7	49.2	140.3	122.9	127.9	63.9	107.7	116.2	107.2	163.2	105.4	138.5	112.6	108.5	108.9	95.6	*****	*****	*****	*****	*****
ALGEIBA 115:	38.4	152.6	81.4	80.5	106.1	99.2	75.6	161.6	103.1	98.1	48.4	60.5	86.5	107.1	46.7	121.5	50.5	84.2	121.7	145.2	*****	*****	*****	*****	*****
SADIR 116:	79.0	92.6	72.4	124.1	8.4	61.3	95.0	80.4	122.3	44.0	121.9	68.8	27.4	89.1	109.9	31.3	83.3	143.7	7.9	95.3	*****	*****	*****	*****	*****
40ZCR 117:	26.3	152.9	89.1	93.2	99.0	105.9	64.6	155.8	95.4	100.8	41.4	46.3	80.4	90.7	30.7	109.9	37.8	83.6	115.1	153.5	*****	*****	*****	*****	*****
118:	114.6	83.0	85.5	30.3	157.6	93.3	111.7	9.1	75.8	112.1	83.8	133.1	158.1	112.2	93.9	160.7	119.1	58.5	149.0	69.3	*****	*****	*****	*****	*****
119:	103.2	93.7	84.5	33.5	157.1	95.4	106.7	106.8	79.0	112.7	76.0	122.3	149.5	113.9	84.5	170.0	108.8	59.0	155.3	80.6	*****	*****	*****	*****	*****
120:	61.7	81.5	159.4	114.6	117.9	177.4	29.5	83.8	28.7	162.1	31.0	70.7	108.1	35.9	43.8	91.4	60.9	28.3	121.8	93.2	*****	*****	*****	*****	*****
121:	106.4	62.7	150.1	94.2	136.4	152.2	55.7	69.7	13.8	168.4	51.7	97.7	132.5	47.8	66.7	104.6	87.4	8.9	132.3	69.5	*****	*****	*****	*****	*****
GOMEISA 122:	78.8	123.4	61.4	37.2	126.4	77.7	112.3	135.9	107.6	89.4	78.8	103.2	117.1	135.6	79.0	157.2	93.8	85.3	133.8	106.8	*****	*****	*****	*****	*****
ARUEB 123:	117.1	85.3	70.1	14.1	141.2	77.0	127.7	97.5	90.2	95.9	97.9	140.3	146.0	126.9	105.9	157.4	128.4	74.5	134.1	66.3	*****	*****	*****	*****	*****
RUCHBACH 124:	81.3	112.1	23.3	78.3	49.9	18.8	133.2	106.8	165.4	7.0	135.1	91.2	55.6	138.3	120.6	80.5	101.1	166.7	51.2	103.3	*****	*****	*****	*****	*****
125:	98.5	105.3	16.0	40.9	86.9	24.2	156.6	108.7	142.9	41.3	131.4	134.8	92.4	166.0	125.5	115.3	122.1	129.4	84.9	80.2	*****	*****	*****	*****	*****
SHERATAN 126:	119.3	80.3	34.7	54.0	77.1	21.6	165.8	81.1	130.4	38.3	159.5	130.6	90.5	139.2	153.7	96.2	140.8	131.7	66.2	66.3	*****	*****	*****	*****	*****
ALPHIRK 127:	65.0	118.2	46.0	102.9	28.4	43.6	108.2	108.0	152.1	24.6	119.5	66.1	30.4	115.8	104.2	60.8	80.1	165.7	37.0	117.3	*****	*****	*****	*****	*****
MIRACH 128:	106.0	88.9	30.7	69.0	60.0	12.5	150.1	85.9	142.4	21.5	158.9	113.4	72.7	135.4	145.2	82.8	124.9	149.0	53.1	78.6	*****	*****	*****	*****	*****
129:	85.2	74.4	170.4	124.5	108.0	169.8	26.1	74.5	26.7	153.6	40.9	69.3	101.2	23.0	51.0	79.5	62.3	36.0	109.9	80.8	*****	*****	*****	*****	*****
130:	75.2	89.2	151.7	112.6	118.9	169.9	26.8	91.9	35.9	159.1	23.1	66.0	100.6	42.2	36.4	95.3	55.7	30.8	125.2	100.0	*****	*****	*****	*****	*****

TABLE II.- Continued

	151	152	153	154	155	156	157	158
111:	74.4	62.2	111.1	102.6	147.5	34.2	26.8	69.7
ALDEMIN 112:	134.9	176.0	32.3	139.5	51.6	87.4	139.6	52.9
ASULLA 113:	70.2	79.8	108.7	123.6	119.4	9.0	44.7	70.0
114:	93.5	98.3	84.1	58.3	47.4	158.5	134.3	125.6
ALGEIDA 115:	123.9	85.1	66.6	54.7	102.7	135.6	105.0	84.1
SADIR 116:	122.1	152.4	47.6	163.8	66.1	63.6	116.3	44.8
ZOZCA 117:	130.1	87.2	61.9	63.8	110.6	123.3	99.9	72.7
118:	52.3	47.1	131.6	24.5	87.8	127.5	82.2	158.7
119:	62.6	46.9	123.0	14.7	91.0	135.1	85.3	147.8
120:	75.9	40.1	115.4	70.7	171.6	68.8	27.7	83.9
121:	49.7	17.6	142.3	60.0	144.8	72.7	19.4	108.8
GOMEISA 122:	93.6	77.8	90.6	34.1	76.6	166.6	113.3	123.8
ARUEB 123:	57.4	62.9	122.7	36.6	71.5	134.5	96.6	162.0
RUCHBACH 124:	122.0	155.3	46.4	116.1	26.2	110.1	162.4	79.8
125:	96.3	117.9	76.1	82.5	22.0	135.3	148.5	115.5
SHERATAN 126:	82.4	120.5	86.2	101.2	14.6	107.3	132.8	114.1
ALPHIRK 127:	140.2	174.2	26.8	132.3	50.7	94.8	145.7	54.4
MIRACH 128:	97.7	138.2	70.1	115.1	12.2	102.1	142.5	56.5
129:	75.6	47.7	114.0	62.8	108.0	50.0	22.6	77.4
130:	81.4	42.0	110.6	66.8	169.9	75.5	35.4	82.9

TABLE II.- Continued

SIRIUS	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
COR CAROLI 131:	102.4	124.0	114.9	63.9	99.7	159.9	101.6	77.5	49.9	25.6	70.3	95.0	97.1	103.5	45.6	154.1	78.7	148.4	14.4	61.6
132:	97.1	66.2	89.4	101.7	65.2	28.2	68.1	126.5	111.6	128.8	122.7	67.6	107.8	101.9	144.3	17.5	95.9	5.9	149.5	73.2
133:	76.3	106.2	59.5	85.2	101.0	106.2	149.3	10.1	133.4	110.2	65.7	101.4	49.2	40.6	85.4	100.3	60.4	119.4	79.7	156.8
KURSA 134:	26.5	50.1	3.5	140.7	105.4	66.3	94.2	51.1	122.3	135.6	39.2	139.4	17.2	12.2	76.6	89.7	116.7	96.3	118.9	147.1
135:	148.9	164.8	130.9	14.1	126.0	125.7	137.7	63.2	101.4	71.2	129.6	36.3	122.0	115.8	114.4	86.0	9.9	97.3	57.1	84.3
ALPACH 136:	87.4	110.3	66.6	78.0	162.0	99.7	154.9	34.2	147.7	118.4	61.9	80.4	61.5	57.1	103.5	83.7	55.7	103.4	60.3	146.4
ZUBENELGENUB 137:	113.6	97.4	137.0	76.1	45.1	105.2	53.3	137.4	21.4	36.3	108.6	78.3	134.2	141.0	75.3	107.6	99.7	90.9	60.8	25.1
138:	110.0	79.1	100.6	88.6	69.8	41.3	75.0	129.2	110.7	120.8	135.6	54.5	118.4	111.9	154.4	15.3	84.2	10.0	137.0	67.7
139:	87.1	53.9	100.5	113.5	11.5	52.7	18.0	152.9	60.4	88.6	103.7	90.5	113.6	114.3	96.7	70.8	128.3	51.1	119.2	43.5
SCHERAR 140:	104.5	129.8	85.4	58.9	166.5	114.4	173.2	42.5	133.8	101.7	93.6	73.0	77.6	74.4	104.6	86.9	38.0	108.3	73.2	129.7
ALGORAD 141:	81.8	77.8	105.4	101.6	47.0	104.9	46.6	114.4	14.5	44.2	75.0	111.8	100.4	107.3	45.1	128.8	124.6	109.0	68.0	56.1
142:	123.8	132.3	139.9	49.2	87.9	147.6	94.3	99.2	42.9	10.4	102.1	74.0	122.5	128.8	66.1	130.4	70.5	123.3	24.8	59.1
ELTAMIN 143:	143.9	175.6	135.9	14.5	121.2	143.3	131.4	82.1	85.5	53.7	119.2	48.6	121.1	121.8	96.6	104.4	27.7	112.2	38.5	80.2
144:	122.1	90.6	137.1	77.1	37.3	79.9	49.1	167.3	51.9	64.9	131.3	60.7	149.2	150.9	105.3	75.2	95.2	59.0	92.9	9.0
145:	88.7	91.5	111.3	90.0	61.0	120.2	61.7	105.7	14.5	31.0	75.8	107.3	101.7	109.2	40.4	140.2	111.7	121.1	52.7	60.0
146:	174.3	140.3	152.2	25.7	95.0	106.0	106.7	115.3	88.0	69.2	159.1	12.2	152.5	147.9	127.6	70.6	37.4	73.3	72.7	55.3
NOFRIL 147:	111.2	110.2	130.5	63.6	76.8	141.0	83.3	101.1	30.4	5.0	92.0	86.3	115.3	122.5	54.8	136.3	84.9	125.9	30.9	58.5
148:	67.3	39.9	85.0	130.7	17.5	57.4	5.6	131.6	55.4	68.0	81.3	114.8	94.4	96.6	76.9	67.1	149.9	60.7	115.3	59.2
149:	147.9	146.6	125.1	26.3	124.1	109.7	135.5	87.1	112.9	65.4	137.7	28.2	122.1	117.7	130.1	70.6	11.3	83.0	73.3	85.7
ANFAA 150:	82.2	57.3	71.3	113.3	75.4	18.7	74.6	109.3	124.9	147.3	107.0	60.3	89.3	93.1	137.4	21.9	100.9	24.6	164.3	91.4

TABLE II.- Continued

	CASIOR	ALDEBARAN	PEACOCK	MIAPLACIDUS	NUNKI	KAUS AUSTRAL	ALPHERATZ	NAVI	ALHENA	MIRFAK	DENEbola	ALPHECCA	RASALHAGUE	MERAK	POLARIS	PHOEIDA	GIENAH	ZEBENESCH	KOCHAB	AVIOR
COR CAROLI 131:	64.0	104.3	133.0	115.4	105.6	105.1	111.7	81.0	83.4	86.0	28.0	35.1	66.4	26.1	52.4	18.7	56.7	57.9	38.3	112.8
132:	141.4	100.8	23.0	62.2	48.0	49.2	78.4	111.0	121.4	114.2	144.6	120.4	90.5	170.1	136.5	166.8	112.2	97.3	142.2	69.8
133:	46.0	33.1	137.8	131.7	136.9	147.3	44.9	26.9	47.5	3.7	96.8	105.5	114.7	60.6	41.5	67.6	128.3	141.2	57.7	121.4
KUNSA 134:	50.8	23.0	106.3	75.6	139.2	136.6	79.4	61.6	30.9	59.3	101.2	149.0	170.0	95.4	94.5	106.9	104.5	148.8	108.1	65.8
135:	102.9	104.9	102.2	153.1	72.3	61.6	53.4	46.3	116.0	69.5	98.8	52.5	42.7	70.4	45.0	67.9	116.0	81.0	42.6	164.6
ALHACH 136:	64.2	41.4	121.6	135.1	119.6	129.6	26.7	21.0	63.2	15.5	115.2	107.8	106.9	74.1	46.9	80.0	146.2	143.4	63.2	127.6
ZUBLERELGROB 137:	114.4	154.8	73.2	73.0	57.4	51.0	140.5	130.8	125.7	145.5	54.3	44.1	49.6	86.7	106.8	79.3	37.1	9.2	90.2	79.8
138:	151.0	108.1	24.3	72.7	39.1	42.0	73.5	104.9	132.1	113.5	145.8	109.4	78.5	157.9	127.1	153.7	115.7	91.5	130.0	81.3
139:	128.9	126.4	34.4	29.5	52.9	42.8	131.8	163.2	119.2	161.2	91.1	95.4	84.7	133.5	159.4	128.0	58.5	59.3	142.9	40.7
SCHERAK 140:	70.7	59.3	124.3	154.2	109.7	120.2	26.0	4.7	76.0	25.0	108.1	89.0	88.3	65.3	32.8	69.4	140.7	123.9	47.5	147.1
ALGURAB 141:	85.6	121.3	91.0	61.1	88.2	79.6	166.5	135.5	92.8	131.7	32.7	62.3	80.8	75.2	107.2	70.6	3.5	41.3	93.4	61.7
IZAR 142:	89.3	128.8	109.8	112.9	80.4	80.4	112.5	89.5	108.8	102.6	42.7	11.1	42.3	49.0	63.7	41.1	57.4	37.3	47.1	115.9
ELTAMIN 143:	93.9	109.8	112.5	151.1	78.8	86.1	69.4	52.9	111.5	73.6	79.8	36.4	39.2	55.2	39.0	51.2	100.7	69.9	29.6	158.2
144:	145.7	161.9	42.4	65.7	28.0	19.4	121.0	134.7	150.0	157.5	86.5	63.6	48.0	116.5	124.9	108.7	62.8	32.8	110.3	76.5
145:	79.6	120.5	102.7	76.3	92.4	85.6	151.2	120.7	91.4	120.5	20.6	50.3	74.1	61.3	92.1	56.0	17.3	39.4	78.1	76.2
146:	133.7	132.2	72.5	120.7	40.2	49.2	71.0	76.9	149.0	100.0	104.3	50.7	22.1	94.4	76.4	89.1	105.7	61.2	69.6	132.2
MURRID 147:	84.5	127.2	109.5	100.7	85.5	82.9	126.0	100.0	102.2	108.9	30.3	24.5	53.2	49.8	72.3	42.3	43.4	34.4	56.3	102.3
148:	106.2	111.4	54.8	15.4	75.2	64.9	145.7	170.2	97.7	147.1	77.6	101.4	101.1	119.6	153.5	116.8	46.0	66.5	140.9	22.9
149:	112.0	102.0	90.8	144.1	65.8	76.0	42.9	47.6	121.1	70.2	114.8	66.0	48.3	85.2	56.0	83.4	130.6	80.9	57.2	154.2
AKAA 150:	122.7	82.1	40.1	62.6	67.6	68.0	71.5	103.2	103.0	100.1	151.1	136.8	107.9	160.5	131.7	167.4	126.1	115.3	144.2	66.6

TABLE II.- Continued

	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
COR CAROLI	131:	115.5	116.0	76.4	159.5	67.5	90.7	156.4	133.1	108.6	114.3	101.4	98.0	107.0	100.6	100.3	105.9	80.1	107.4	102.5
																				109.3
	132:	46.5	64.1	65.0	38.1	122.0	67.3	45.5	32.9	75.1	58.2	62.1	70.4	88.9	80.0	98.2	90.4	117.6	92.9	80.2
																				93.8
	133:	157.3	30.9	158.9	77.0	93.6	115.6	88.6	101.2	56.4	82.5	164.1	152.1	66.4	111.4	54.8	50.0	27.7	74.8	105.1
																				63.8
KURSA	134:	105.8	52.5	120.8	65.7	64.5	65.0	45.7	107.6	93.3	111.4	108.1	97.8	35.5	57.4	8.1	8.8	34.0	22.4	52.7
																				10.9
	135:	118.7	77.3	111.5	92.4	137.3	105.1	128.9	67.2	42.6	43.6	122.5	134.4	161.4	175.2	127.7	128.9	99.8	147.9	173.8
																				136.5
ALMACH	136:	145.9	18.9	174.0	63.1	111.2	127.7	83.5	83.0	38.9	64.9	160.7	159.1	98.3	120.5	64.5	65.8	42.7	84.7	115.6
																				72.9
ZUBERILGNOB	137:	56.1	167.3	22.6	133.7	78.9	76.0	123.6	98.5	126.5	105.4	44.8	49.1	105.2	85.0	135.7	134.4	142.1	117.7	86.5
																				129.2
	138:	50.7	85.1	85.9	41.8	133.6	98.5	57.4	21.3	67.5	47.3	66.0	76.5	102.0	92.1	109.3	109.7	124.4	105.7	98.6
																				105.8
	139:	8.1	133.5	33.8	89.0	81.2	51.1	70.9	77.5	125.5	101.5	6.9	18.3	74.4	52.3	106.3	105.3	135.8	87.3	59.4
																				97.4
SCHEDAR	140:	150.6	36.7	155.2	74.5	119.3	144.5	101.1	81.2	33.2	57.8	164.1	176.7	116.2	139.0	82.2	83.5	56.4	102.5	133.3
																				90.9
ALGURAB	141:	65.7	156.1	29.2	145.3	45.1	50.3	113.5	128.3	157.0	139.2	50.0	43.3	76.0	61.1	102.5	101.2	111.5	86.6	61.7
																				97.2
IZAR	142:	96.7	120.6	64.1	150.6	84.6	104.4	166.5	110.8	103.5	98.4	87.9	90.1	124.7	115.3	131.5	131.0	112.2	129.3	114.5
																				133.6
ELTAMIN	143:	121.2	89.8	101.2	111.2	119.4	147.3	147.6	84.1	60.4	62.0	119.0	127.3	154.7	158.2	129.5	130.3	99.6	146.1	155.3
																				138.1
	144:	34.7	143.0	33.2	101.5	101.7	82.6	101.1	60.1	106.0	82.3	35.8	40.3	109.6	86.9	142.9	141.9	170.4	123.3	93.3
																				134.0
	145:	78.9	149.8	40.1	160.6	48.6	63.3	127.9	133.5	144.6	135.1	63.5	58.3	85.6	74.2	136.3	105.2	107.2	94.1	73.5
																				103.0
	146:	86.3	98.1	86.3	89.2	144.8	140.5	120.3	49.9	56.9	39.0	91.1	104.2	164.8	144.0	154.6	155.9	131.2	168.9	150.9
																				160.5
MUFRIE	147:	92.8	138.0	54.8	163.1	71.2	90.0	154.2	121.1	117.8	112.1	79.8	79.3	110.7	101.0	123.1	122.3	110.6	116.7	100.1
																				123.0
	148:	30.1	133.1	35.2	97.9	59.0	28.8	69.1	98.1	144.7	123.2	21.3	9.3	55.1	32.1	84.8	87.7	116.3	68.7	38.5
																				80.0
	149:	111.8	69.4	116.5	76.7	153.0	169.6	113.2	52.1	29.9	27.5	120.0	133.6	156.6	165.0	124.9	126.2	101.6	144.2	169.6
																				132.5
ADKAA	150:	58.7	69.6	98.1	24.6	114.7	43.4	28.4	42.9	72.9	64.0	73.3	77.9	76.4	73.9	80.0	80.3	98.9	77.4	78.5
																				76.4

TABLE II.- Continued

	POLLUX	MINTAKA	ALIOTH	DZUBA	75	76	77	78	79	80	BATEN KAITOS	61	62	MIZAR	SARGAS	MOHLIFAIN	84	85	86	87	88	89	90
COR CAROLI 131:	63.9	106.5	17.6	74.7	107.4	88.9	92.3	72.4	83.6	101.4	95.2	103.9	17.3	103.3	87.3	87.3	103.3	87.3	85.6	89.7	102.7	95.6	73.1
						*****	*****		*****							*****			*****	*****			
132:	140.8	98.2	157.9	80.5	75.4	72.3	72.8	132.4	77.1	53.4	105.8	76.7	153.8	52.0	80.7	80.7	52.0	80.7	76.9	80.7	91.6	73.6	81.8
																					*****		
133:	50.3	53.6	70.4	154.6	120.5	109.7	159.9	23.5	166.9	150.6	9.2	124.9	73.2	159.5	150.3	162.0	145.6	162.0	145.6	91.7	150.0	151.6	
																					*****		
KURSA 134:	50.4	7.7	108.8	147.7	65.5	118.5	107.1	51.4	121.4	135.2	53.6	70.9	113.1	131.5	101.1	112.7	95.5	40.3	96.6	150.6			
																					*****		
135:	106.8	126.4	60.0	84.8	166.5	113.6	125.4	86.9	111.2	88.5	74.0	161.7	57.1	92.6	131.4	119.9	137.0	103.6	135.8	81.9			
																					*****		
ALNACH 136:	68.3	63.2	80.0	148.8	126.7	171.6	108.2	41.8	174.1	139.1	12.1	133.9	82.4	141.4	164.2	174.6	156.6	102.0	159.1	145.9			
ZUBENELGEMUS 137:	111.7	137.0	70.1	17.6	77.8	31.4	39.9	131.1	26.3	43.9	154.8	72.5	73.3	44.4	44.1	44.1	33.3	47.5	100.1	43.7	18.1		
138:	151.5	109.1	144.6	75.3	86.7	73.7	76.9	136.2	77.9	48.4	106.2	87.4	140.8	40.1	86.0	75.6	87.1	104.7	79.9	75.9			
139:	124.4	107.4	127.4	46.5	43.2	21.6	19.1	148.7	27.1	35.4	152.2	40.0	125.4	31.3	27.5	23.8	28.8	72.3	21.7	49.4			
SCHERAR 140:	75.2	80.9	67.5	130.4	147.7	159.4	171.0	48.8	156.7	129.2	28.4	152.7	68.2	132.7	172.4	165.3	172.5	119.9	178.6	127.4			
ALGORAB 141:	81.9	103.6	72.7	49.7	57.4	41.1	39.4	106.9	37.1	70.6	138.1	52.5	72.4	69.3	32.5	35.5	34.5	70.4	40.6	51.1			
IZAR 142:	89.3	131.8	35.1	52.9	111.8	74.5	81.8	95.4	69.3	78.0	111.8	106.9	31.5	80.5	80.9	75.2	85.1	119.4	88.8	50.8			
ELTAFIA 143:	97.0	128.5	42.7	78.4	154.9	107.3	117.9	83.6	103.3	90.6	80.6	149.8	39.3	94.6	120.3	111.4	125.8	152.5	127.3	75.3			
144:	142.3	144.0	103.2	16.0	77.8	27.3	38.3	163.0	27.4	11.5	158.6	73.5	99.6	12.6	47.3	35.0	52.3	106.8	48.4	17.6			
145:	76.7	107.4	57.5	52.6	71.6	52.8	53.4	98.5	48.0	77.6	128.5	67.0	57.0	77.3	47.5	48.6	49.8	80.0	55.7	53.0			
146:	137.0	153.2	80.1	58.2	134.8	84.7	96.1	119.3	83.4	56.3	102.5	131.1	76.0	60.3	104.3	91.9	109.7	164.0	106.2	55.6			
MUFRAD 147:	83.4	123.7	39.3	51.2	98.0	66.6	71.9	95.8	61.3	76.3	118.2	93.2	37.0	75.8	69.3	65.7	75.0	105.3	77.5	49.9			
148:	101.7	90.1	120.0	59.2	23.1	29.9	18.7	126.6	33.3	50.6	142.1	16.6	119.8	52.8	16.7	24.9	12.1	51.9	9.1	62.3			
149:	116.4	123.5	75.8	88.4	159.3	114.9	120.1	92.5	113.8	84.5	72.2	156.0	73.2	88.2	134.7	122.3	140.0	161.9	136.0	65.7			
ANKAA 150:	122.5	79.8	165.6	98.5	72.1	65.4	82.9	114.5	90.7	71.7	30.9	75.1	164.3	65.9	68.7	68.3	80.9	80.3	80.0	100.0			

TABLE II.- Continued

	AL MAZN	ALGENIB	DUBHE	SCUTULUM	MARKAB	CAPH	PHACT	SABIK												
	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110
COR CAROLI 131:	103.8	106.0	86.1	71.0	107.5	84.0	125.6	29.1	97.4	87.4	79.9	107.6	120.5	91.3	82.6	124.1	80.3	77.3	77.1	107.0
	132:	92.2	68.7	73.7	83.2	62.1	70.9	65.3	164.8	72.7	70.7	75.1	72.4	62.3	111.6	107.5	74.4	73.9	78.2	128.4
	133:	87.3	138.0	170.9	141.1	149.0	157.9	53.9	57.1	148.0	173.2	156.6	126.7	65.1	8.2	32.7	85.9	143.2	158.1	27.1
	134:	35.8	82.7	123.6	162.6	93.0	145.8	75.7	94.0	94.2	129.1	147.3	71.8	92.1	47.9	86.6	29.9	159.2	144.6	44.0
KUNSA 135:	159.9	148.9	108.8	69.9	137.3	85.0	63.2	65.9	138.2	102.8	84.6	160.2	51.4	80.8	40.9	153.7	70.2	87.9	94.3	99.3
	136:	98.1	144.3	169.9	133.9	150.9	146.3	36.1	69.8	156.5	163.0	147.3	134.2	46.9	21.5	24.4	91.0	132.2	151.5	44.7
ALMAH 137:	104.4	63.6	27.1	26.4	57.1	27.1	142.1	89.7	51.4	26.9	23.1	74.9	125.7	152.0	127.8	115.6	33.5	18.8	133.4	46.8
	138:	105.3	77.8	74.0	75.1	69.3	65.5	61.9	153.3	79.5	69.5	69.7	63.1	55.1	113.6	160.5	87.3	65.5	73.6	134.2
	139:	76.2	26.3	25.7	59.5	14.3	42.0	119.1	138.1	21.9	27.0	44.1	36.9	113.6	150.9	157.8	74.0	55.8	43.0	141.7
SCHEDAK 140:	115.5	163.7	154.4	115.5	167.4	130.2	41.7	60.2	170.0	148.2	130.1	153.5	45.2	35.8	4.9	110.3	145.4	135.5	54.4	138.0
	141:	74.3	51.2	41.2	60.2	52.0	57.5	175.8	80.1	42.3	46.7	54.3	55.2	159.5	129.4	137.2	90.8	67.0	49.3	105.8
IZAR 142:	121.9	102.8	70.3	46.4	99.0	61.4	124.0	50.2	91.3	69.2	57.5	109.1	111.9	110.8	88.0	142.0	55.5	56.1	101.1	85.4
LETAMIN 143:	151.5	142.2	102.2	64.4	133.8	81.7	80.7	51.5	30.0	97.6	79.9	151.2	70.1	84.9	49.1	162.3	68.0	81.8	91.3	101.5
	144:	111.0	60.2	23.4	23.9	48.8	6.8	115.5	118.2	50.4	16.3	10.7	71.5	101.4	168.1	128.8	110.7	19.1	13.8	165.6
	145:	83.4	66.5	51.6	59.2	67.7	61.9	164.6	65.9	57.5	55.7	58.0	70.0	152.4	121.2	121.9	102.0	67.7	53.4	99.2
	146:	167.5	117.4	80.1	44.1	105.4	55.5	74.1	91.2	108.3	73.4	56.2	128.5	57.8	110.7	70.9	152.0	41.0	60.5	126.6
BUFRID 147:	108.1	90.6	63.3	49.4	88.6	60.8	138.1	52.6	79.8	64.0	56.6	95.8	126.3	114.9	99.5	127.9	59.0	53.8	99.9	83.4
	148:	56.2	5.9	35.1	74.0	8.7	58.4	131.7	124.9	6.4	40.7	59.0	16.9	131.9	135.8	174.4	59.6	73.2	56.0	120.0
	149:	157.6	144.8	110.5	73.9	132.8	85.9	50.1	80.3	137.6	103.6	86.6	154.2	36.4	80.6	41.5	141.7	71.4	90.8	99.0
ADKAA 150:	79.7	71.4	88.0	102.1	68.5	89.1	57.6	157.0	78.9	86.3	93.2	71.2	60.5	95.2	101.5	59.9	92.8	95.9	105.8	66.3



TABLE II.- Continued

	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130
COR CANALI 131:	93.6	70.1	109.2	91.2	38.4	79.6	28.3	114.6	163.2	81.7	106.4	70.8	117.1	81.3	98.5	119.3	05.0	106.0	85.2	75.2
132:	61.9	110.7	45.3	114.5	152.6	92.0	152.9	83.0	93.7	81.5	62.7	123.4	05.3	112.1	105.3	00.3	118.2	00.9	74.4	89.2
133:	164.1	51.3	138.1	35.2	61.4	72.4	89.1	85.5	84.5	159.4	150.1	61.4	70.1	23.3	10.0	34.7	40.8	30.7	170.4	151.7
KURSA 134:	136.7	106.8	135.5	27.2	80.5	124.1	93.2	30.3	33.5	114.6	94.2	37.2	14.1	78.3	40.9	54.0	102.9	69.0	124.5	112.6
135:	91.9	22.0	75.6	107.7	106.1	8.4	99.0	157.6	157.1	117.9	136.4	126.4	141.2	49.9	86.9	77.1	28.4	60.0	108.0	113.9
136:	148.0	45.0	120.3	49.2	99.2	61.3	105.9	93.3	95.4	177.4	152.2	77.7	77.0	18.8	24.2	21.6	43.6	12.5	169.8	169.9
137:	34.5	107.4	58.9	140.3	75.6	95.0	64.6	111.7	106.7	29.5	55.7	112.3	127.7	133.2	158.6	165.8	108.2	150.1	26.1	28.8
138:	56.0	100.2	36.1	122.9	161.6	80.4	155.8	90.1	106.8	83.8	69.7	135.9	97.5	106.8	108.7	81.1	108.0	85.9	74.5	91.9
139:	33.2	145.8	50.2	127.9	103.1	122.3	99.4	75.8	79.0	26.7	13.8	107.6	90.2	165.4	142.9	130.4	152.1	142.4	26.7	35.9
SCHUUR 140:	135.4	25.6	111.7	63.9	98.1	44.0	100.8	112.1	112.7	102.1	108.4	89.4	95.9	7.0	41.3	38.3	24.6	21.5	153.6	159.1
ALGORAB 141:	60.8	123.3	06.7	107.7	48.4	121.9	41.4	63.8	70.0	31.0	51.7	70.8	97.9	135.1	131.4	159.5	119.5	158.9	40.9	23.1
IZAR 142:	71.6	69.9	83.9	116.2	60.5	66.6	48.3	133.1	122.3	70.7	97.7	103.2	140.3	91.2	118.8	130.6	60.1	113.4	69.3	60.8
ELTAMIN 143:	90.7	28.7	82.7	107.2	88.5	27.4	80.4	158.1	149.5	108.1	132.5	117.1	146.0	55.8	92.4	90.5	30.4	72.7	101.2	106.8
144:	3.8	110.6	28.3	163.2	107.1	89.1	96.7	112.2	113.9	35.9	47.8	135.6	126.9	138.3	160.0	139.2	115.8	135.4	23.0	42.2
145:	67.8	108.3	93.6	105.4	40.7	109.9	30.7	93.9	84.5	43.8	06.7	79.0	105.9	120.6	125.5	153.7	104.2	145.2	51.0	36.4
146:	60.6	54.1	43.7	138.9	121.5	31.3	109.9	160.7	170.0	91.4	104.6	157.2	157.4	80.5	115.3	96.2	60.8	82.8	79.5	95.3
HOFRIL 147:	70.1	82.9	88.4	112.6	50.5	83.3	37.8	119.1	108.8	60.9	87.4	93.8	128.4	101.1	122.1	140.8	80.1	124.9	62.3	55.7
148:	51.9	164.6	72.7	108.5	84.2	143.7	83.6	58.5	59.0	28.3	8.9	65.3	74.5	166.7	129.4	131.7	165.7	149.0	36.0	30.8
149:	90.2	29.1	68.4	108.9	121.7	7.9	115.1	149.0	155.3	121.8	132.3	133.8	134.1	51.2	84.9	68.2	37.0	53.1	109.9	125.2
AUKAA 150:	79.5	111.4	64.1	95.6	145.2	99.3	153.5	69.3	80.6	93.2	69.5	106.8	68.3	103.3	88.2	66.3	117.3	78.6	88.8	100.0

TABLE II.- Continued

	COR CAROLI	131	132	133	134	135	136	ALMACH	ZUBENELGENU	137	138	139	SCHEDAR	ALGORAB	IZAR	ELTAMIN	143	144	145	146	MUFRID	147	148	149	150	ANKAA
COR CAROLI	131:	154.2	86.2	114.2	71.2	97.9	60.7	144.4	110.2	85.1	55.2	25.4	52.4	90.9	39.9	83.3	23.7	102.6	87.4	173.1						
	132:	115.0	90.6	100.0	99.7	96.1	96.1	13.1	53.8	106.3	112.2	129.1	115.9	64.5	125.1	77.8	131.6	69.6	85.0	16.9						
	133:	86.2	115.0	56.1	73.0	18.2	146.5	115.1	158.9	28.7	129.7	104.0	76.7	161.6	119.4	103.7	109.5	143.5	73.9	100.0						
KURSA	134:	114.2	90.6	56.1	127.4	63.1	140.1	101.4	103.2	81.6	108.0	139.5	132.5	140.4	113.2	149.8	131.1	86.5	121.9	72.1						
	135:	71.2	100.0	73.0	127.4	64.3	90.2	87.5	123.9	45.6	114.8	61.0	19.0	88.7	102.1	32.4	75.4	143.4	16.2	107.5						
ALMACH	136:	97.9	99.7	18.2	63.1	64.3	151.8	97.9	151.9	19.5	147.3	110.0	73.5	146.8	135.2	91.1	119.2	150.2	80.7	87.4						
ZUBENELGENUB	137:	60.7	96.1	146.5	140.1	90.2	151.8	92.3	52.8	132.6	33.8	43.1	78.7	32.4	35.0	69.6	37.1	57.8	97.9	112.8						
	138:	144.4	13.1	115.1	101.4	87.5	97.9	92.3	58.0	100.3	114.6	119.1	102.9	59.9	125.1	64.7	124.5	77.6	73.1	49.4						
	139:	110.2	53.6	158.9	103.9	123.9	151.9	52.8	58.6	158.7	50.5	96.0	123.6	36.7	72.3	91.7	30.4	22.7	118.5	64.5						
SCHEDAR	140:	85.1	106.3	28.7	81.8	45.6	19.5	132.6	100.3	158.7	139.9	32.3	54.0	124.9	75.1	103.5	169.6	45.2	98.9							
ALGORAB	141:	55.2	112.2	129.7	108.0	114.6	147.3	33.8	114.8	58.5	139.9	54.5	97.6	60.6	125.3	102.2	40.7	47.5	127.2	121.2						
IZAR	142:	25.4	129.1	104.0	139.5	61.0	110.0	43.1	119.1	96.0	92.3	54.5	43.3	68.2	41.2	61.8	14.5	97.6	75.5	148.0						
ELTAMIN	143:	52.4	115.9	76.7	132.5	19.0	73.5	78.7	102.9	123.6	54.0	97.8	43.3	87.0	84.2	40.1	57.4	136.3	35.1	125.9						
	144:	90.6	64.5	161.6	140.4	88.7	146.8	32.4	59.9	36.7	132.9	60.4	68.2	87.0	66.4	57.9	67.2	54.9	87.8	82.5						
	145:	39.9	125.1	119.4	113.2	102.1	135.2	35.0	125.1	72.3	124.9	15.3	41.2	84.2	66.4	96.1	26.8	62.8	116.3	136.1						
	146:	83.3	77.8	103.7	149.8	32.4	91.1	69.6	64.7	51.7	75.1	102.2	61.8	40.1	57.9	96.1	74.2	112.5	30.4	92.3						
MUFRID	147:	23.7	131.6	109.5	131.1	75.4	119.2	37.1	124.5	88.4	103.5	40.7	14.5	57.4	67.2	26.6	74.2	85.9	89.9	149.6						
	148:	102.6	69.6	143.5	88.6	143.4	150.2	57.8	77.6	22.7	169.6	47.5	97.6	136.3	54.9	62.8	112.5	65.9	140.9	74.2						
	149:	87.4	85.0	73.9	121.9	16.2	60.7	97.9	73.1	116.5	45.2	127.2	75.5	35.1	87.8	116.3	30.4	89.9	140.9	91.4						
ANKAA	150:	173.1	18.9	100.0	72.1	107.5	87.4	112.8	29.4	64.5	98.9	121.2	140.0	125.9	82.5	136.1	92.3	149.6	74.2	91.4						

TABLE II.- Continued

	151	152	153	154	155	156	157	158
COR CAROLI 131:	154.8	109.7	38.1	92.0	104.7	105.4	107.8	45.9
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132:	31.2	67.5	140.2	100.7	94.1	49.9	53.8	112.7
	---	---	---	---	---	---	---	---
133:	111.3	132.6	60.3	93.3	21.6	130.9	164.3	99.5
	---	---	---	---	---	---	---	---
KURSA 134:	66.4	77.0	111.2	47.2	58.0	140.3	110.1	152.8
	---	---	---	---	---	---	---	---
135:	130.0	154.0	40.3	158.7	69.8	66.6	117.7	37.9
	---	---	---	---	---	---	---	---
ALMACH 136:	103.9	138.3	65.0	106.7	7.4	113.8	153.5	97.7
	---	---	---	---	---	---	---	---
20BLMELGEnUB 137:	101.7	69.6	88.0	92.9	158.9	61.2	48.7	54.5
	---	---	****	---	---	---	---	---
138:	44.3	77.6	127.8	113.4	93.5	39.0	57.0	100.3
	---	---	---	---	---	---	---	---
139:	49.0	30.3	140.5	73.6	144.9	59.0	6.4	101.4
	---	---	---	---	---	---	---	---
SCALCAR 140:	119.1	157.7	48.6	122.0	26.3	103.5	155.4	78.2
	---	---	---	---	---	---	---	---
ALGOREB 141:	99.9	55.7	92.9	61.4	151.1	93.0	58.5	77.1
	---	---	---	---	---	---	---	---
142:	144.6	108.2	45.0	108.6	117.4	80.1	91.6	25.7
	---	---	---	---	---	---	****	---
LLTAMIN 143:	147.0	148.2	26.6	143.1	80.3	74.3	117.4	24.2
	---	---	---	---	---	---	---	---
144:	78.0	65.4	107.3	105.0	147.2	33.4	30.4	65.9
	---	---	---	---	---	---	---	---
145:	115.3	70.9	77.6	69.9	140.7	96.0	71.4	65.6
	---	---	---	---	---	---	---	---
146:	108.5	121.9	66.7	162.0	94.7	34.9	85.5	37.4
	---	---	---	---	---	---	****	---
MUFID 147:	136.8	95.6	54.9	94.7	126.5	86.6	85.1	39.7
	---	---	---	---	---	---	****	---
148:	52.5	11.9	140.2	51.6	143.3	81.4	28.0	112.1
	---	---	---	---	---	---	---	---
149:	114.2	147.6	55.3	167.2	64.6	59.6	112.9	50.7
	---	---	---	---	---	---	---	---
ANKAA 150:	23.7	68.2	143.8	90.6	80.8	68.2	66.5	129.1
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	SIRIUS	CANOPUS	RIGEL	VEGA	HADAR	ACHERNAR	ACRUX	CAPELLA	SPICA	ARCTURUS	PROCYON	ALTAIR	BETELGEUSE	DELLATRIX	REGULUS	FORMALHAUT	DENEK	AL MAIR	ALKAID	ANTARES
11	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
151:	66.6	35.4	64.2	132.9	58.1	5.1	54.1	114.7	107.0	137.5	92.3	96.7	82.6	70.7	115.6	43.5	124.3	35.2	167.6	80.9
152:	57.1	28.0	73.5	142.2	28.5	50.2	17.2	122.7	65.4	96.3	74.1	120.2	84.6	65.6	77.1	84.3	156.3	67.9	123.4	70.5
153:	117.4	152.6	114.0	41.0	132.9	162.0	136.2	00.4	85.2	53.5	52.7	74.7	90.6	95.2	74.9	15.5	44.6	137.6	24.9	95.0
154:	20.7	34.5	44.3	150.0	68.6	75.6	57.1	80.3	75.5	99.5	30.3	164.1	45.2	50.0	46.6	112.4	157.9	103.7	105.1	106.9
155:	83.2	103.6	61.4	83.8	154.6	92.5	147.7	36.7	154.1	125.8	80.6	88.7	58.4	55.2	106.2	76.8	60.8	98.2	95.6	148.9
156:	141.8	105.6	139.3	60.3	65.2	76.1	76.1	146.0	82.5	82.4	162.7	31.5	157.4	150.7	136.4	51.7	69.5	44.3	99.9	37.0
157:	93.4	60.3	106.8	107.1	13.3	56.5	22.8	159.2	56.6	84.9	109.3	84.6	120.0	120.6	99.2	70.3	122.4	50.5	115.5	37.4
158:	148.2	151.9	155.4	24.6	97.5	139.6	107.2	102.0	63.5	34.9	123.9	49.4	137.2	140.6	90.6	108.2	47.8	107.4	36.8	58.1

TABLE II.- Continued

	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
ATRIA																				
HAMAL																				
MENKENT																				
DIPHDA																				
ALPHARD																				
AL SUHAIL																				
ACAMAR																				
DENEB ALGEID																				
SCHWAT																				
ENIF																				
RIGIL KENT																				
BEGRUX																				
ADHARA																				
REGOR																				
ANILAM																				
ALNITAK																				
EL NATU																				
MURZIM																				
MAOS																				
SAIPH																				

	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
POLLUX																				
MINTAKA																				
ALIOTH																				
DZUBA																				
MENKLINAN																				
BATEN KAITOS																				
MIZAR																				
SARGAS																				
MUHLIFAIN																				
ALUDRA																				
GACRUX																				
ACMA																				

TABLE II.- Continued

	AL WAZN										ALGENIB										SCUTULUM										MARKAB										CAPH					PHACT					SABIK					
	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130																
151:	61.1	48.9	74.6	101.5	48.5	84.8	79.0	159.6	58.0	75.4	68.2	47.6	64.1	104.4	122.6	44.3	93.9	69.0	110.1	60.7	151:	74.4	134.9	70.2	93.5	123.9	122.1	130.1	52.3	62.6	75.9	49.7	95.6	57.4	122.0	96.3	82.4	140.2	97.7	75.6	61.4															
152:	46.1	0.0	46.8	85.0	16.7	89.5	124.4	127.6	18.2	52.2	70.4	6.6	120.4	124.0	162.0	47.7	84.2	67.7	111.4	55.0	152:	62.2	176.0	79.8	98.3	85.1	152.4	67.2	47.1	48.9	40.1	17.6	77.8	62.9	155.5	117.9	120.5	174.2	158.2	47.7	42.0															
153:	125.1	144.0	115.0	83.4	143.5	100.9	87.5	25.7	134.5	113.0	98.0	145.0	83.3	86.0	44.9	136.1	89.5	98.2	67.4	123.9	153:	111.1	32.3	108.7	84.1	60.6	47.6	61.9	131.8	123.0	115.4	142.3	90.6	122.7	46.4	76.1	86.2	26.6	70.1	114.0	110.6															
154:	13.5	47.3	82.3	118.0	59.4	106.8	121.9	93.0	54.9	89.1	106.0	37.0	137.5	26.6	123.7	55.5	121.1	101.6	86.5	98.2	154:	102.6	139.9	123.6	58.3	54.7	163.8	63.8	24.5	14.7	70.7	60.0	34.1	36.6	116.1	62.5	151.2	132.3	115.1	82.8	66.8															
155:	93.5	137.5	167.5	136.5	143.5	148.3	52.7	76.2	149.7	162.1	150.2	127.9	45.6	22.0	31.2	84.7	135.3	154.9	45.8	140.7	155:	147.5	51.6	119.4	47.4	102.7	66.1	110.6	87.8	91.0	171.6	144.8	76.6	71.5	20.2	22.0	14.6	50.7	12.2	160.0	169.9															
156:	132.6	85.3	56.2	36.1	73.3	35.6	82.0	123.2	76.9	49.3	36.8	95.6	68.1	135.2	100.5	120.9	28.8	43.8	157.8	34.7	156:	34.2	87.4	9.0	156.5	135.6	63.6	123.3	127.5	135.1	66.6	72.7	166.6	134.5	110.1	139.3	107.3	54.8	102.1	56.0	75.5															
157:	82.5	32.2	21.9	53.4	20.1	35.8	118.6	136.5	26.1	22.5	36.1	43.0	111.3	156.6	153.4	60.3	49.5	37.3	147.8	18.8	157:	26.8	139.6	44.7	134.3	165.0	116.3	55.5	62.2	65.3	27.7	19.4	113.3	90.6	162.4	146.5	132.8	145.7	142.5	22.8	35.4															
158:	147.6	118.0	76.4	42.2	110.0	59.8	100.6	59.9	105.8	74.4	57.4	127.4	86.9	107.7	73.4	167.5	47.6	58.6	108.8	82.2	158:	69.7	52.9	70.6	125.6	84.1	44.6	72.7	158.7	147.6	65.9	106.6	123.6	162.0	79.8	115.5	114.1	54.4	96.5	77.4	82.9															

TABLE II.- Concluded

COR CAROLI	KURSA	ALMACH	ZUBENELGENUS	SCHEDAR	ALGORAB	IZAR	ELTAMIN	MUFRID	ANKKA										
131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
151: 154.8	31.2	111.3	66.4	130.0	103.9	101.7	44.3	49.0	119.1	99.9	144.6	147.6	73.0	115.3	108.5	130.8	52.5	114.2	23.7
152: 109.7	67.5	132.6	77.0	154.0	136.3	69.6	77.6	36.3	157.7	55.7	108.2	146.2	65.4	70.9	121.5	95.6	11.9	147.6	68.2
153: 38.1	140.2	60.3	111.2	40.3	65.0	68.0	127.8	146.5	48.0	92.5	45.0	26.6	107.3	77.6	63.7	54.9	146.2	55.3	143.8
154: 92.0	100.7	93.3	47.2	158.7	106.7	52.9	113.4	73.6	122.0	61.4	106.6	143.1	105.0	69.7	162.0	94.7	51.6	167.2	90.6
155: 104.7	94.1	21.6	58.0	69.8	7.4	156.9	93.5	144.9	26.3	151.1	117.4	80.3	147.2	140.7	98.7	126.5	143.3	64.6	00.8
156: 105.4	49.9	130.9	140.3	66.6	113.6	61.2	39.0	59.0	103.5	93.0	60.1	74.3	33.4	96.0	34.9	80.6	61.4	59.6	68.2
157: 107.8	53.8	164.3	110.1	117.7	153.5	46.7	57.0	6.4	155.4	58.5	91.6	117.4	30.4	71.4	85.5	85.1	28.0	114.9	60.5
158: 45.9	112.7	99.5	152.8	37.9	97.7	54.5	100.3	101.4	78.2	77.1	25.7	24.2	65.9	65.6	37.4	39.7	112.1	50.7	129.1

	151	152	153	154	155	156	157	158
151:		45.1	167.1	69.8	96.6	77.2	53.1	140.2
152:	45.1		147.8	43.8	131.5	88.8	36.4	124.0
153:	167.1	147.8		118.7	72.4	100.6	135.4	41.7
154:	69.8	43.8	116.7		103.3	132.5	79.4	134.3
155:	96.6	131.5	72.4	103.3		113.8	147.3	104.5
156:	77.2	88.8	100.6	132.5	113.6		53.4	63.5
157:	53.1	36.4	135.4	79.4	147.3	53.4		95.5
158:	140.2	124.0	41.7	134.3	104.5	63.5	95.5	

TABLE III.- SUMMARY OF TWO-STAR COMBINATIONS OF THE STARTRACKER 5° FILTER

SIRIUS	11:	[15]	[44]	[51]	[54]	[61]	[77]	[86]	[120]	[130]	[136]	[139]	[145]	[155]
CANOPUS	12:	[19]	[31]	[71]	[80]	[84]	[109]	[111]	[115]	[125]	[144]	[145]		
RIGEL	13:	[17]	[26]	[38]	[87]	[95]	[99]	[105]	[121]	[132]	[140]	[148]		
VEGA	14:	[19]	[26]	[41]	[52]	[81]	[84]	[106]	[110]	[117]	[126]	[133]	[138]	[145] [155]
HAZAR	15:	[11]	[25]	[42]	[43]	[56]	[68]	[115]	[117]	[123]	[142]			
ACHILLES	16:	[23]	[30]	[37]	[53]	[59]	[96]	[101]	[103]	[130]	[155]			
ACRUX	17:	[13]	[20]	[21]	[26]	[70]	[115]	[117]	[122]	[147]				
CAPELLA	18:	[41]	[54]	[57]	[116]	[135]	[149]							
SPICA	19:	[12]	[14]	[21]	[33]	[49]	[63]	[71]	[88]	[91]	[119]	[122]	[143]	[140] [153]
ARCTURUS	20:	[17]	[31]	[51]	[71]	[95]	[113]	[121]	[139]	[148]	[149]	[151]	[126]	[124] [136] [147]
PROCYON	21:	[17]	[19]	[29]	[38]	[45]	[49]	[62]	[83]	[85]	[89]	[95]	[99]	[121] [124] [126] [136] [147] [155] [157]
ALTAIR	22:	[29]	[51]	[52]	[53]	[61]	[73]	[76]	[79]	[83]	[93]	[126]	[129]	[136] [139] [147] [155] [157]
BETELGEUSE	23:	[16]	[34]	[37]	[41]	[46]	[73]	[92]	[97]	[150]	[152]			
DELBATIX	24:	[34]	[45]	[46]	[59]	[92]	[117]	[150]	[152]					
REGULUS	25:	[15]	[40]	[61]	[70]	[93]	[95]	[100]	[104]	[121]	[125]	[129]	[133]	[158]
FORMALHAUT	26:	[13]	[14]	[17]	[30]	[43]	[50]	[62]	[74]	[75]	[76]	[77]	[79]	[81] [89] [90] [92] [93]
OLULIS	27:	[30]	[36]	[48]	[54]	[78]	[90]	[96]	[101]	[109]	[136]	[147]	[135]	[136] [140] [148] [152]
AL NAIR	28:	[43]	[48]	[52]	[56]	[69]	[116]	[118]	[123]	[126]	[128]	[130]	[137]	[149]
ALKAID	29:	[21]	[22]	[30]	[39]	[53]	[67]	[79]	[81]	[96]	[104]	[120]	[122]	[130] [136]
ANTARES	30:	[16]	[26]	[27]	[29]	[56]	[60]	[64]	[83]	[116]	[117]	[135]	[149]	[150] [151]
CARTOR	31:	[12]	[20]	[37]	[47]	[50]	[75]	[82]	[112]	[141]	[142]	[147]		
ALDEBARAN	32:	[46]	[49]	[50]	[50]	[75]	[112]	[151]	[153]					
PEACOCK	33:	[19]	[47]	[59]	[63]	[69]	[97]	[118]	[141]	[149]				
MIAPLACIDUS	34:	[23]	[24]	[39]	[41]	[54]	[94]	[107]	[115]	[156]				
Nunki	35:	[47]	[50]	[97]	[102]	[141]	[145]	[147]	[152]					
KAUS AUSTRAL	36:	[27]	[50]	[54]	[57]	[59]	[75]	[82]	[103]	[143]	[145]	[147]	[156]	[158]
ALPHAKATZ	37:	[16]	[23]	[31]	[39]	[43]	[65]	[66]	[70]	[96]	[123]	[156]		
NAVI	38:	[13]	[21]	[42]	[43]	[56]	[70]	[122]	[142]					
ALHENA	39:	[29]	[34]	[37]	[47]	[83]	[97]	[127]	[131]	[145]	[152]	[153]		
MIREX	40:	[25]	[57]	[63]	[91]	[106]	[115]	[117]	[118]	[119]	[131]			
DENEbola	41:	[14]	[18]	[23]	[34]	[43]	[50]	[61]	[66]	[67]	[68]	[95]	[107]	[111] [114] [118] [121] [127]
ALPHECCA	42:	[15]	[36]	[60]	[61]	[77]	[85]	[87]	[89]	[105]	[124]	[140]	[157]	
RASALHAGUL	43:	[15]	[26]	[28]	[37]	[36]	[41]	[44]	[47]	[62]	[77]	[85]	[105]	[132] [139] [140]
MEKAR	44:	[11]	[43]	[48]	[52]	[65]	[66]	[70]	[72]	[126]	[137]	[149]	[154]	
POLARIS	45:	[21]	[24]	[65]	[66]	[72]	[145]							
PHOLDA	46:	[23]	[24]	[32]	[90]	[94]	[126]	[130]	[146]	[149]	[154]	[155]		
GIENAH	47:	[31]	[33]	[35]	[39]	[43]	[68]	[106]	[113]					
ZEPEWLSCH	48:	[27]	[28]	[44]	[49]	[50]	[55]	[56]	[75]	[96]	[110]	[130]	[149]	
KUCHAD	49:	[19]	[21]	[32]	[46]	[60]	[94]	[97]	[103]	[107]	[122]	[140]	[150]	
AVIOR	50:	[26]	[31]	[32]	[35]	[36]	[41]	[46]	[54]	[71]	[90]	[113]	[114]	[115] [117]



TABLE III.- Continued

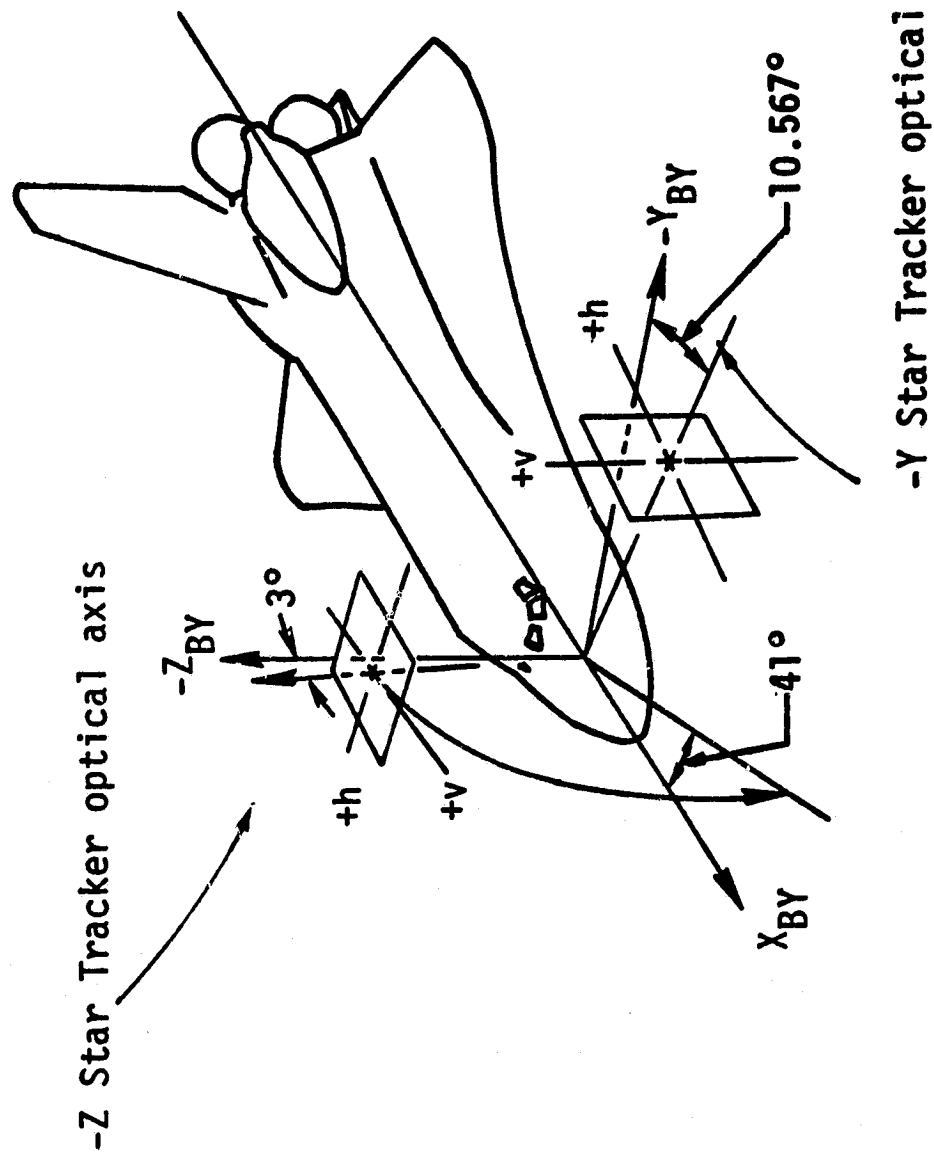
ATRIA	51:	[ 11]	[ 20]	[ 22]	[ 22]	[ 54]	[ 55]	[ 68]	[ 119]	[ 140]	[ 119]	[ 132]	[ 138]	[ 143]	[ 151]	[ 153]			
HAMAL	52:	[ 14]	[ 22]	[ 28]	[ 44]	[ 44]	[ 63]	[ 80]	[ 91]	[ 96]	[ 132]	[ 138]	[ 146]	[ 84]	[ 88]	[ 91]	[ 102]	[ 109]	[ 110]
MENKLANT	53:	[ 16]	[ 22]	[ 29]	[ 63]	[ 63]	[ 83]	[ 91]	[ 118]	[ 119]	[ 132]	[ 138]	[ 146]	[ 84]	[ 88]	[ 91]	[ 102]	[ 109]	[ 110]
DIPHDA	54:	[ 11]	[ 18]	[ 27]	[ 34]	[ 34]	[ 36]	[ 50]	[ 51]	[ 63]	[ 64]	[ 75]	[ 80]	[ 84]	[ 88]	[ 91]	[ 102]	[ 109]	[ 110]
		[ 112]	[ 116]	[ 119]	[ 135]	[ 135]	[ 139]	[ 146]	[ 152]	[ 157]	[ 157]	[ 101]	[ 109]	[ 132]	[ 147]	[ 150]			
ALPHARD	55:	[ 48]	[ 51]	[ 57]	[ 100]	[ 104]	[ 104]	[ 125]	[ 142]	[ 151]	[ 157]	[ 101]	[ 109]	[ 132]	[ 147]	[ 150]			
AL SUHAIL	56:	[ 28]	[ 30]	[ 32]	[ 48]	[ 48]	[ 67]	[ 74]	[ 80]	[ 90]	[ 96]	[ 84]	[ 85]	[ 86]	[ 109]	[ 110]	[ 113]	[ 133]	[ 136]
ACARAR	57:	[ 18]	[ 36]	[ 40]	[ 55]	[ 55]	[ 59]	[ 60]	[ 76]	[ 77]	[ 80]	[ 84]	[ 85]	[ 86]	[ 109]	[ 110]	[ 113]	[ 133]	[ 136]
DLNEB	58:	[ 15]	[ 38]	[ 61]	[ 76]	[ 76]	[ 79]	[ 93]	[ 95]	[ 121]	[ 124]	[ 127]	[ 129]	[ 136]	[ 143]	[ 158]			
SCHIED	59:	[ 16]	[ 24]	[ 33]	[ 36]	[ 36]	[ 57]	[ 83]	[ 98]	[ 109]	[ 114]	[ 108]	[ 111]	[ 125]	[ 151]				
ENIF	60:	[ 30]	[ 42]	[ 49]	[ 57]	[ 57]	[ 74]	[ 80]	[ 96]	[ 101]	[ 104]	[ 108]	[ 111]	[ 125]	[ 151]				
RIGIL KENT	61:	[ 11]	[ 22]	[ 25]	[ 41]	[ 41]	[ 42]	[ 58]	[ 68]	[ 117]	[ 142]	[ 146]							
BECKRUX	62:	[ 21]	[ 26]	[ 43]	[ 70]	[ 70]	[ 115]	[ 122]	[ 123]	[ 142]									
ALHARA	63:	[ 19]	[ 33]	[ 40]	[ 52]	[ 52]	[ 53]	[ 54]	[ 76]	[ 79]	[ 81]	[ 93]	[ 126]	[ 129]	[ 132]	[ 133]	[ 145]		
REGOR	64:	[ 30]	[ 54]	[ 67]	[ 74]	[ 74]	[ 80]	[ 84]	[ 96]	[ 101]	[ 106]	[ 109]	[ 111]	[ 137]	[ 138]	[ 144]			
ANILAN	65:	[ 37]	[ 44]	[ 45]	[ 92]	[ 92]	[ 98]	[ 105]	[ 117]	[ 148]									
ALWITAK	66:	[ 37]	[ 41]	[ 44]	[ 45]	[ 45]	[ 97]	[ 98]	[ 105]	[ 117]	[ 140]	[ 148]							
EL NATH	67:	[ 29]	[ 41]	[ 56]	[ 61]	[ 61]	[ 103]	[ 131]											
MURZIM	68:	[ 15]	[ 41]	[ 47]	[ 51]	[ 51]	[ 61]	[ 77]	[ 86]	[ 128]	[ 130]	[ 130]	[ 139]	[ 141]					
NAOS	69:	[ 28]	[ 33]	[ 78]	[ 84]	[ 84]	[ 110]	[ 111]	[ 125]	[ 132]	[ 137]								
SAIPH	70:	[ 17]	[ 37]	[ 36]	[ 44]	[ 44]	[ 62]	[ 85]	[ 87]	[ 89]	[ 97]	[ 97]	[ 99]	[ 117]	[ 121]	[ 124]	[ 140]		
POLLUX	71:	[ 12]	[ 19]	[ 20]	[ 50]	[ 50]	[ 75]	[ 82]	[ 102]	[ 112]	[ 142]	[ 147]							
MINTAKA	72:	[ 44]	[ 45]	[ 92]	[ 98]	[ 98]	[ 105]	[ 117]	[ 146]										
ALIOTh	73:	[ 22]	[ 23]	[ 74]	[ 90]	[ 90]	[ 101]	[ 107]	[ 108]	[ 125]	[ 128]	[ 155]							
UZUBA	74:	[ 26]	[ 56]	[ 60]	[ 64]	[ 64]	[ 73]	[ 83]	[ 116]	[ 135]	[ 149]	[ 151]							
	75:	[ 26]	[ 31]	[ 32]	[ 36]	[ 36]	[ 48]	[ 54]	[ 71]	[ 90]	[ 113]	[ 114]	[ 138]	[ 131]	[ 146]	[ 150]	[ 156]		
	76:	[ 22]	[ 25]	[ 26]	[ 57]	[ 57]	[ 58]	[ 63]	[ 91]	[ 106]	[ 115]	[ 118]	[ 119]	[ 131]	[ 146]	[ 150]	[ 156]		
	77:	[ 11]	[ 26]	[ 42]	[ 43]	[ 43]	[ 57]	[ 68]	[ 115]	[ 131]	[ 150]								
MENKLINAN	78:	[ 27]	[ 69]	[ 103]	[ 116]	[ 116]	[ 135]	[ 143]	[ 143]										
	79:	[ 22]	[ 26]	[ 29]	[ 58]	[ 58]	[ 63]	[ 91]	[ 115]	[ 118]	[ 119]	[ 131]	[ 146]	[ 150]					
BATEN KAITOS	80:	[ 12]	[ 54]	[ 56]	[ 57]	[ 57]	[ 64]	[ 103]	[ 116]	[ 135]	[ 143]	[ 149]	[ 151]						
	81:	[ 14]	[ 26]	[ 29]	[ 63]	[ 63]	[ 88]	[ 91]	[ 106]	[ 115]	[ 118]	[ 119]	[ 150]						
	82:	[ 31]	[ 36]	[ 71]	[ 94]	[ 94]	[ 107]	[ 113]	[ 114]	[ 138]									
MIZAR	83:	[ 21]	[ 22]	[ 30]	[ 39]	[ 39]	[ 53]	[ 59]	[ 74]	[ 101]	[ 107]	[ 108]	[ 114]	[ 122]	[ 125]	[ 128]	[ 130]	[ 155]	
SARGAS	84:	[ 12]	[ 14]	[ 54]	[ 57]	[ 57]	[ 64]	[ 69]	[ 116]	[ 135]	[ 149]								
MUHLIFAIN	85:	[ 21]	[ 42]	[ 43]	[ 57]	[ 57]	[ 70]	[ 122]	[ 123]	[ 131]	[ 138]	[ 150]							
	86:	[ 11]	[ 57]	[ 68]	[ 106]	[ 106]	[ 115]	[ 131]	[ 146]	[ 150]	[ 156]								
	87:	[ 13]	[ 42]	[ 70]	[ 122]	[ 122]	[ 131]	[ 138]	[ 142]	[ 150]	[ 156]								
ALUDRA	88:	[ 19]	[ 52]	[ 54]	[ 81]	[ 81]	[ 93]	[ 100]	[ 104]	[ 129]	[ 132]	[ 133]							
GACRUX	89:	[ 21]	[ 26]	[ 42]	[ 76]	[ 76]	[ 122]	[ 123]	[ 142]										
ACRAB	90:	[ 26]	[ 27]	[ 46]	[ 50]	[ 50]	[ 56]	[ 60]	[ 73]	[ 75]	[ 116]	[ 149]	[ 153]						

TABLE III.- Continued

AL BACH	91:	[ 19]	[ 40]	[ 52]	[ 53]	[ 54]	[ 70]	[ 79]	[ 81]	[ 93]	[126]	[129]	[132]	[133]	[143]
92:	[ 23]	[ 24]	[ 26]	[ 26]	[ 55]	[ 72]	[115]	[117]	[134]	[147]	[150]				
93:	[ 22]	[ 25]	[ 26]	[ 26]	[ 56]	[ 63]	[ 86]	[ 91]	[115]	[119]	[131]	[150]			
94:	[ 26]	[ 34]	[ 46]	[ 46]	[ 49]	[ 62]	[102]	[112]	[117]	[132]	[152]	[153]			
95:	[ 13]	[ 20]	[ 21]	[ 21]	[ 25]	[ 41]	[ 50]	[ 70]	[115]	[117]	[147]				
96:	[ 16]	[ 27]	[ 29]	[ 29]	[ 56]	[ 60]	[ 64]	[116]	[117]	[131]	[135]	[149]	[150]	[151]	
ALGETA	97:	[ 23]	[ 33]	[ 35]	[ 39]	[ 49]	[ 66]	[ 70]	[106]	[113]	[123]	[153]	[156]		
DOHIC	98:	[ 37]	[ 48]	[ 52]	[ 55]	[ 63]	[ 68]	[ 72]	[120]	[137]	[146]				
100:	[ 13]	[ 21]	[ 26]	[ 26]	[ 70]	[122]	[142]	[131]	[150]	[154]					
101:	[ 14]	[ 25]	[ 26]	[ 26]	[ 55]	[ 68]	[117]	[ 73]	[ 83]	[116]	[117]	[135]	[149]	[151]	
SCOFULIN	102:	[ 16]	[ 26]	[ 27]	[ 56]	[ 60]	[ 64]	[ 73]	[114]	[117]	[130]				
HARKAB	103:	[ 26]	[ 35]	[ 54]	[ 71]	[ 94]	[107]	[113]	[114]	[134]	[151]	[158]			
104:	[ 25]	[ 29]	[ 55]	[ 67]	[ 76]	[ 80]	[109]	[114]	[134]	[151]					
CAPH	105:	[ 13]	[ 26]	[ 42]	[ 43]	[ 65]	[ 66]	[ 72]	[122]	[134]	[142]				
PHACT	106:	[ 40]	[ 47]	[ 76]	[ 61]	[ 86]	[ 97]	[115]	[120]	[130]	[133]	[136]	[138]	[141]	[155]
SABIK	107:	[ 34]	[ 41]	[ 45]	[ 73]	[ 82]	[ 83]	[102]	[112]	[152]	[153]				
108:	[ 16]	[ 20]	[ 60]	[ 64]	[ 73]	[ 83]	[116]	[117]	[135]	[149]	[151]				
109:	[ 12]	[ 27]	[ 54]	[ 56]	[ 57]	[ 59]	[ 64]	[103]	[143]						
110:	[ 14]	[ 54]	[ 57]	[ 69]	[142]	[147]									
111:	[ 12]	[ 41]	[ 60]	[ 64]	[ 69]	[116]	[135]	[143]	[149]						
ALLERMIN	112:	[ 31]	[ 32]	[ 54]	[ 71]	[ 94]	[107]	[114]	[147]	[150]					
ASCLLA	113:	[ 20]	[ 47]	[ 50]	[ 57]	[ 73]	[ 82]	[102]	[141]	[142]	[143]	[147]			
114:	[ 41]	[ 55]	[ 59]	[ 75]	[ 75]	[ 82]	[ 93]	[102]	[103]	[112]	[142]	[143]	[147]		
ALGETA	115:	[ 12]	[ 13]	[ 17]	[ 34]	[ 44]	[ 50]	[ 62]	[ 76]	[ 77]	[ 81]	[ 86]	[ 94]	[ 95]	[106]
116:	[ 124]	[125]	[127]	[129]	[143]	[143]	[148]	[152]	[158]						
SADIK	117:	[ 18]	[ 20]	[ 30]	[ 40]	[ 54]	[ 74]	[ 78]	[ 80]	[ 84]	[ 90]	[ 96]	[101]	[108]	[111]
118:	[ 147]	[ 15]	[ 17]	[ 24]	[ 24]	[ 30]	[ 40]	[ 43]	[ 50]	[ 61]	[ 65]	[ 66]	[ 70]	[ 72]	[ 92]
202CA	119:	[ 14]	[ 101]	[102]	[104]	[108]	[118]	[121]	[123]	[127]	[133]	[148]	[152]	[155]	[157]
120:	[ 26]	[ 28]	[ 33]	[ 40]	[ 40]	[ 51]	[ 53]	[ 54]	[ 76]	[ 79]	[ 81]	[ 93]	[126]	[133]	[145]
121:	[ 19]	[ 40]	[ 51]	[ 52]	[ 53]	[ 54]	[ 58]	[ 70]	[115]	[117]	[147]				
GOMEISA	122:	[ 13]	[ 20]	[ 21]	[ 25]	[ 41]	[ 58]	[ 70]	[115]	[117]	[147]				
123:	[ 17]	[ 19]	[ 29]	[ 38]	[ 38]	[ 49]	[ 62]	[ 83]	[ 85]	[ 87]	[ 89]	[ 99]	[105]	[124]	[128]
ARDES	124:	[ 15]	[ 26]	[ 28]	[ 37]	[ 62]	[ 85]	[ 89]	[ 97]	[117]	[124]	[132]	[139]		
RUCBACH	125:	[ 21]	[ 42]	[ 43]	[ 58]	[ 70]	[115]	[122]	[123]	[142]					
126:	[ 12]	[ 25]	[ 55]	[ 66]	[ 66]	[ 69]	[ 73]	[ 83]	[115]	[116]	[135]	[143]	[145]	[150]	
SILKATA	127:	[ 14]	[ 21]	[ 22]	[ 23]	[ 45]	[ 63]	[ 91]	[ 98]	[115]	[143]				
128:	[ 37]	[ 41]	[ 56]	[115]	[115]	[117]									
129:	[ 20]	[ 41]	[ 40]	[ 53]	[ 53]	[ 75]	[ 93]	[122]	[132]	[146]					
130:	[ 22]	[ 25]	[ 28]	[ 50]	[ 50]	[ 55]	[ 60]	[ 68]	[ 83]	[106]	[116]	[132]	[136]	[150]	

TABLE III.- Concluded

[illegible]



h = Tracker horizontal axis  
v = Tracker vertical axis

Figure 1.- Shuttle star tracker.

FIGURE 2.- 148 NAVIGATION STARS FOR SHUTTLE STAR TRACKERS.